No. 533

No. 7398.

FILED
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JOHN T. FEY, Clerk

United States Court of Appeals

FOR THE FOURTH CIRCUIT.

THE AMERICAN MONORAIL COMPANY,
Defendant-Appellant,

vs.

PARKS-CRAMER COMPANY,
Plaintiff-Appellee.

CIVIL ACTION No. 1072.

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA.

APPENDIX OF APPELLANT.

CRAIGHILL, RENDLEMAN & KENNEDY,
J. B. CRAIGHILL,
607-613 Law Building,
Charlotte 2, North Carolina,

RICHEY, WATTS, EDGERTON & McNENNY,
F. O. RICHEY,
B. D. WATTS,
520 Union Commerce Building,
Cleveland 14, Ohio,
Attorneys for Defendant-Appellant.

TALIAFERRO, GRIER, PARKER & POE,
400 Law Building,
Charlotte 2, North Carolina,

HEARD, SMITH, PORTER & CHITTICK,
41 Tremont Street,
Boston 8, Massachusetts,
Attorneys for Plaintiff-Appellee.

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	Direct	Cross	Re-Direct
William B. Grainger	23a	23a	30a
Roy H. Todd	---	32a	---
Lester Whitener	---	34a	36a
S. M. Cauble	---	36a	---

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CIVIL ACTION NO. 1072.

In the United States District Court

FOR THE WESTERN DISTRICT OF NORTH CAROLINA.

PARKS-CRAMER COMPANY,

Plaintiff,

v.

THE AMERICAN MONORAIL COMPANY,

Defendant.

COMPLAINT.

(Filed December 28, 1954.)

1. This action arises under the patent laws of the United States, Title 35 U. S. Code.

2. The plaintiff Parks-Cramer Company is a corporation chartered under the laws of the state of Massachusetts, is domesticated in the state of North Carolina and maintains a principal place of business in the city of Charlotte in the Western District of North Carolina. The defendant The American MonoRail Company is a corporation chartered under the laws of the state of Ohio, is domesticated in the state of North Carolina, with a designated process agent in said state, and maintains a regular and established place of business at 1506½ Central Avenue in the city of Charlotte in the Western District of North Carolina, and has committed infringing acts within said District.

3. On October 10, 1950 United States Letters Patent No. 2,524,797 were duly and legally issued to Grover B. Holtzclaw for an invention entitled TRAVELING CLEANER FOR TEXTILE MACHINES OR THE LIKE, which Letters Patent have been assigned to the plaintiff Parks-Cramer Company, and which, since said time, have been and still are owned by said plaintiff.

4. The defendant has infringed and still is infringing Claim 6 of said Letters Patent by making, selling or using TRAVELING CLEANER FOR TEXTILE MACHINES OR THE LIKE embodying the patented invention or by inducing such infringement of said Letters Patent, and will continue to do so unless enjoined by this Court.

5. The plaintiff has placed the required statutory notice on all TRAVELING CLEANERS FOR TEXTILE MACHINES OR THE LIKE manufactured and sold by it under said Letters Patent No. 2,524,797.

WHEREFORE plaintiff demands a preliminary and final injunction against further infringement by defendant and those controlled by the defendant, an accounting for profits and damages and an assessment of costs against the defendant.

PARKS-CRAMER COMPANY,
BY JOSEPH W. GRIER, JR.,
Attorney for Plaintiff.

December 28, 1954.

TALIAFERRO, GRIER, PARKER & POE,
HEARD, SMITH, PORTER & CHITTICK,
Of Counsel.

ANSWER TO COMPLAINT.

(Filed March 11, 1955.)

Now comes the defendant, The American Monorail Company, and for its Answer to the Complaint in the above-entitled action says:

1. Defendant admits the allegations of paragraph 1 of the Complaint.

2. Answering paragraph 2 of the Complaint, defendant admits that The American Monorail Company is a corporation of the State of Ohio with an established place of business in the City of Charlotte in the Western District of North Carolina with a designated agent to receive

process in North Carolina. Defendant is without knowledge of plaintiff's residence or charter and therefore leaves plaintiff to its proof.

Defendant denies that it has committed infringing acts in the Western District of North Carolina or elsewhere in the United States and denies all other allegations of said paragraph 2 not specifically admitted.

3. Answering paragraph 3 of the Complaint, defendant admits that United States Letters Patent No. 2,524,797 issued to G. B. Holtzclaw on October 10, 1950, but denies that said patent was duly and legally issued and is without knowledge of said patents assigned to plaintiff and therefore leaves plaintiff to its proof.

4. Answering paragraph 4 of the Complaint, defendant denies the allegations contained therein.

5. Answering paragraph 5 of the Complaint, defendant is without knowledge of the allegations contained therein and leaves plaintiff to its proof.

6. Defendant denies that the plaintiff is entitled to the relief set forth in its prayer or for any relief.

7. Further answering, defendant says, on information and belief, that because of the state of the art prior to the date of the alleged invention by said patentee or more than one year before the filing of the application for said Letters Patent, plaintiff cannot now seek to obtain a construction of claim 6 of said Letters Patent No. 2,524,797 sufficiently broad to cover anything manufactured, caused to be manufactured, sold, installed, and offered for sale and installation, by defendant.

8. Further answering, defendant says that said Letters Patent No. 2,524,797 is invalid and void for the following reasons:

(A) Because prior to the alleged invention or discovery of the alleged improvements in said Letters Patent described and purporting to be patented, or more than one year prior to the application for said Letters Patent, the alleged improvements, or all material and substantial part

or parts thereof had been patented or described in the following patents and printed publications:

UNITED STATES PATENTS

Number	*Patentee*	*Issued*
57,008	W. H. Stone	Aug. 7, 1866
386,153	F. Moeller	July 17, 1888
490,269	A. Chisholm	Jan. 24, 1893
553,291	H. Nicholsburg	Jan. 21, 1896
566,853	L. T. Foreman	Sept. 1, 1896
752,598	G. M. Schwend	Feb. 16, 1904
1,158,079	W. F. Saunders	Oct. 26, 1915
1,169,990	A. J. Neafie	Feb. 1, 1916
1,326,140	R. Robinson	Dec. 23, 1919
1,486,163	F. Smelik	Mar. 11, 1924
1,781,142	W. B. Walker	Nov. 11, 1930
1,791,640	B. E. Rodin	Feb. 10, 1931
1,920,768	W. J. Smith	Aug. 1, 1933
2,047,558	W. B. Hodge	July 14, 1936
2,068,496	L. Linghammar	Jan. 19, 1937
2,108,759	G. W. Turman	Feb. 15, 1938
2,137,917	J. B. Lintern	Nov. 22, 1938
2,141,916	T. A. Johnson	Dec. 27, 1938
2,309,362	G. Trautvetter	Jan. 26, 1943

(B) Because the applicant for said Letters Patent was not the original or first inventor and discoverer of the alleged invention purporting to be patented therein but the same or all material and substantial part or parts thereof had previously been devised by others; to wit: The several patentees of the United States Letters Patents listed in Sub-section (A) hereof, and by others not now fully known to defendant, but whose names defendant prays leave to add to this answer when found.

(C) Because prior to the alleged invention or discovery by the applicant of the alleged improvements in said Letters Patent No. 2,524,797 described and purporting to be patented, said alleged improvements of all material and substantial part or parts thereof, had been known to and used by others in the United States, to wit:

By the several patentees of the United States Patents listed in Sub-section (A) hereof, whose places of residence are named in the respective patents, and who had such knowledge and use at their respective places of residence; and by others not fully known to defendant, but whose names defendant prays leave to add to this answer when found.

(D) Because for more than one year prior to the filing of the application for said Letters Patent the alleged invention had been in public use and on sale in this country by the persons referred to in Sub-section (C) hereof.

(E) Because in view of the state of the art prior to the alleged invention by said patentee, as shown by the prior patents and prior knowledge and use by others, all as hereinabove in this answer set forth, as well as by other devices commonly known to and used by the public, no exercise of invention was involved in the alleged improvements purporting to be patented by said Letters Patent, but the same involved merely the expected skill of those skilled in the art.

(F) Because claim 6 of said Letters Patent No. 2,524,797 fails to particularly point out and distinctly claim the part, improvement or combination of the alleged invention or discovery as required by Section 112 of the Patent Recodification Act, Title 35 U. S. C. A. 112.

WHEREFORE, defendant denies that plaintiff is entitled to the relief prayed for in the Complaint, or to any relief, and defendant prays that the Complaint be dismissed and that it have reasonable costs and disbursements in this cause sustained and that it be awarded reasonable attorney's fees and such other relief as to the Court may seem just.

B. D. WATTS,
H. F. SCHNEIDER,
Attorneys for Defendant.

H. B. CAMPBELL, ESQ.
CAMPBELL, CRAIGHILL, RENDLEMAN & KENNEDY,
RICHEY, WATTS, EDGERTON & MCNENNY,
Attorneys for Defendant.

NOTICE UNDER TITLE 35 SECTION 282.

(Filed January 4, 1956.)

To: Cedric W. Porter, Esq.,
Heard, Smith, Porter & Chittick,
41 Tremont Street,
Boston 8, Massachusetts,

Joseph W. Grier, Jr.,
Taliaferro, Grier, Parker & Poe,
400 Law Building,
Charlotte 2, North Carolina.

Please take notice that in accordance with Section 282 of Title 35 of the United States Code, that at the trial of this case the defendant, in addition to the patents listed in paragraph 8(A) of defendant's Answer to Complaint and of the patentees listed in paragraphs 8(B) and 8(C) thereof, will rely upon the following identified patents and patentees:

Patent No.	*Patentee*	*Issued*
870,766	J. B. Eaton	Nov. 12, 1907
883,132	F. C. Goff	Mar. 24, 1908
Re. 23,294	W. H. Hopper	Nov. 21, 1950.

B. D. WATTS,
Attorney for Defendant.

December 29, 1955

DEPOSITION OF G. B. HOLTZCLAW.
(Defendant's Exhibit V.)

APPEARANCES:

JOSEPH W. GRIER, JR.,
TALIAFERRO, GRIER, PARKER & POE,
400 Law Building,
Charlotte, N. C.,
Attorneys for Plaintiff.

B. D. WATTS,
520 Union Commerce Bldg.,
Cleveland, Ohio,
Attorney for Defendant.

These depositions are being taken on behalf of defendant under the Federal Rules of Civil Procedure, especially Rule 46-b which has to do with adverse witnesses. These depositions are being taken upon oral examination of the party plaintiff by two of its employees who are produced here in the place and stead of an officer or director, the witnesses being Mr. Grover B. Holtzclaw and Mr. Robert H. Brown, pursuant to the annexed notice, at the place designated therein.

* * * * *

MR. G. B. HOLTZCLAW, being first duly sworn, deposes and says:

DIRECT EXAMINATION BY MR. WATTS.

Q1. Will you give your full name, age and residence? A. My name is Grover Bascom Holtzclaw, age 64. I live at 1909 Plaza, Charlotte, N. C.

Q2. You are now employed by the plaintiff? A. Yes, sir.

Q3. How long have you been so employed? A. I have been employed since November 12, 1918.

Q4. What was your education and training? A. I have been a machinist all my life ever since a small boy.

* * * * *

(4) Q7. What has been the nature of your work with the Parks-Cramer Company? A. I went to work in 1918 as a machinist. I worked for them as a machinist for about one year and then I did experimental jobs in 1918. Did that for about three years and since then I have been in research.

* * * * *

Q12. I suppose you are thoroughly familiar with various kinds of spinning frame cleaners used all that time? A. Yes, sir.

Q13. What was used in 1930? By cleaning, I am referring to removing lint from frames. A. Well, the Parks-Cramer cleaner was developed about that time. The Walker cleaner was developed earlier.

(5) Q14. By Walker cleaner, did you refer to that shown in Walker patent 1781142? Is that what you mean by the Walker cleaner? A. Yes, sir.

Defendant's Exhibit No. 1—Patent No. 1781142 marked for identification.

* * * * *

(6) Defendant's Exhibit No. 2—Patent No. 2047558 marked for identification.

Q21. Now you say you were thoroughly familiar with the cleaner of Hodge patent No. 2047558? A. Yes, sir.

Q22. From what date? A. I don't remember the dates. I had nothing to do with the patent end of it.

Q23. Your connection was by way of building or testing? A. Developing.

Q24. Did you develop this cleaner? A. Yes, sir.

Q25. Tell us about that. How did it come about and what did you do? Was it your idea originally? A. No, not the Hodge cleaner.

Q26. What did you do in connection with it? A. I developed the cleaner in accordance with Mr. Hodge's idea.

Q27. You constructed this cleaner? A. All the mechanism.

(7) Q28. Does that patent No. 2 correctly show the Hodge cleaner you developed? A. Yes, I think so.

Q29. Was that cleaner used commercially? A. Yes, sir.

Q30. Over what period of time, approximately? A. You mean the cleaner as a whole? It is still being used.

Q31. When did you begin to use it? A. I don't remember the exact dates when we began to use it.

Q32. Is it still being used just as is? A. No, not just as is. There have been improvements made from time to time.

Q33. Now that patent Exhibit No. 2 is referred to in your patent here in suit No. 2524797. That is correct, isn't it? A. That is right.

Q34. Does your patent No. 2524797 disclose what you did or does it disclose the ideas of some other people? A. It discloses the ideas of what I did.

Q35. Over and above what was present in the Hodge patent No. 2047558? A. It is applied to the Hodge patent.

(8) Q36. Now the carriage and the housing with the fan in it in your patent are the same as in the Hodge patent are they not? A. The hood, fan, etc., are the same in the Holtzclaw patent as the Hodge patent—the principle used.

Q37. What's the difference between the two patents? A. The difference between as I have seen it, is that the Holtzclaw patent has a flexible cuff which comes down below head room and is not injurious to operators and is formed in a shape to project air under the top of the creel board and on the top of the tapers to do cleaning that no traveling cleaner has heretofore done.

Q38. What was your object in adding those inwardly turned cuffs? A. My object is like any research man's job in trying to improve his product and I knew for some time we, or any traveling cleaner people, weren't cleaning surfaces that weren't directly in line with air.

Q39. How did you determine that fact? By looking at the spinning frames? A. That is right.

Q40. Anybody could see where lint accumulated on a frame couldn't they? That is the way you discovered it? A. Yes, by accumulation of lint.

(9) Q41. You knew also that places in direct stream of air had no accumulation of lint on them? Isn't that a fact? A. Where portions of the frame were in direct contact with the stream of air, that is right.

Q42. In the machines of the Hodge patent, Exhibit No. 2, the outlets for the air are adjustable are they not? A. Yes, it was later made adjustable.

Q43. They are shown being made adjustable in this patent? A. Yes, sir.

* * * * *

(11) Q58. Do I understand that it is your position that with the Hodge cleaner of this patent Exhibit No. 2, there would be some places between the upper and lower creel boards which would be out of the direct line of air from both of these nozzles? A. Yes, in some cases that creel board would be out of the direction of air stream.

Q59. And those places out of the air stream would permit the accumulation of lint? A. That is right.

(12) Q60. That was perfectly obvious to anybody wasn't it? A. It would be for them to see the accumulation of lint.

Q61. Since you prevented accumulation of lint on other places by directing an air stream on to those places, wouldn't it be obvious all you had to do to prevent accumulation of lint between the creel boards was to direct air at those places? A. That is right. That's what I claim my patent does. Direct air underneath boards, not in direct line with air streams.

* * * * *

Q63. Let's limit ourselves to these two patents, Hodge No. 2047558 and your patent here in suit. How much more space do you think your device cleans on a spinning frame than the Hodge device would clean? Let's look at it this way, Mr. Holtzclaw. In the Hodge patent we have upper and lower creel boards, Nos. 3 and 4 I believe they are numbered? (13) A. That is right.

Q64. I gather from your patent the idea you were concerned with was better cleaning between those two

boards? A. Not necessarily those two boards. The whole of the frame.

Q65. You wanted better cleaning between those two boards? A. We got better cleaning.

Q66. Hodge did get some cleaning between those two boards? A. After a fashion, yes.

Q67. You got more cleaning than he did? A. That is right.

Q68. So it is a matter of degree. You get more cleaning than he did between those two boards? A. Yes, and other surfaces.

* * * * *

(14) Q72. Let's look for a minute at figure No. 2 of your patent and figure No. 2 of the Hodge patent No. 2047558. I think you also said that the motor, the carriage, the fan, the fan housing and the rigid ducts were the same in both machines, or substantially the same? A. Principally the same.

Q73. The operation is the same, isn't it? In other words, the motor turns the fan and blows air out through the conduit. The carriage runs along a track? A. Over the top of a frame, yes, sir.

Q74. The only difference is that you have put these flexible cuffs on the outlets from the main rigid conduit? A. The difference is the Hodge cleaner terminates above head heights.

Q75. Your rigid parts terminate above head heights? A. Yes, sir.

Q76. Any difference there? A. Principally I would say not.

Q77. You have added these flexible cuffs. That's the only difference isn't it? A. That is right.

(15) Q78. When you added these flexible cuffs, did that change the operation of the carriage, or the motor or the fan? A. No.

Q79. When you put these flexible hoses on, they didn't change the operation of any of the parts in the Hodge patent? A. No.

Q80. If you put your flexible cuffs on the Hodge ap-

paratus, it would operate the same as it did before? A. It is on the Hodge cleaner.

Q81. In your patent there is reference made to the flexible cuffs. It says on page 2, column 3, line 37, I'll read—"The nozzles 18 of the machines are of rigid material." What material did you have in mind when this application was filed? A. Well, some flexible material that would not be injurious to an operator.

Q82. You didn't name any in here except woven fabric and I'll read from column 3, line 56—"Preferably the sleeve or nozzle 19 comprises a cuff of suitable woven fabric which desirably is impregnated with suitable material to make it impervious to the blast of air passing therethrough." What impregnating material did you have in mind? A. Anything that was flexible and would be perfectly safe to pass over the heads of operators.

(16) Q83. You didn't describe any suitable impregnating material, did you? A. No, sir.

Q84. Now, how flexible did you intend to make this cuff? A. Well, the more flexible the better. The more flexible, the less chance of injury as it passes over the operators' heads.

Q85. How is any one going to know from this patent, what kind of material to use? What to use to impregnate it and how flexible to make it?

Objection. (Mr. Grier) This is a matter for argument in Court.

Q86. What were the limits you place on this material, limits of flexibility? A. I don't place any limits of flexibility on the material. The more flexibility to allow it to hold its shape, the better.

Q87. But there is no description in the patent as to how flexible or rigid the cuff should be? A. I don't think so.

Q88. There is no description in here as to how thick or thin the cuff material should be?

(17) Objection. (Mr. Grier) What the patent discloses is a matter of record and not for this witness to claim or deny.

Q89. Did you have in mind at the time this patent application was written, any limits to the rigidity or flexibility of the cuff? A. Nothing more than for the safety of the help and to be able to conduct the air down to parts to be cleaned.

Q90. You mean you hadn't made any determination how thick or thin the cuff should be? A. Not in the model. Not in the first of it, no, sir.

Q91. Did you ever determine how thick or thin the cuff material should be? A. Yes, later we had to go to thicker material in order to offset the force of our air jets.

Q92. Isn't it true you are still experimenting with the thickness, rigidity and material of the cuff? A. We are continually trying to improve cleaning with these cuffs.

Q93. Are you still experimenting with cuffs of different thicknesses? A. No.

Q94. Are you still experimenting with cuffs of different rigidity or flexibility? A. We have recently.

(18) Q95. Are you still experimenting with different materials composing the cuff? A. You mean different materials the cuff is made out of as a whole. I don't think so.

Q96. Are you experimenting with different materials to use as part of a cuff? A. Yes.

Q97. Do those materials have anything to do with the rigidity or flexibility of the cuff? A. They have something to do with the rigidity, yes.

Q98. Now, all those things were known to you at the time you filed application? A. Yes.

* * * * *

(19) Q104. Let's look at the drawing. Isn't it true the only space you could clean was between the two creel boards? A. The one shown in the drawing. That is right.

* * * * *

(22) Q120. In column 3 of your patent, line 61, I quote—"As illustrated in figure 3 the end 25 of the cuff is folded around a thin ring 26 of rigid material." What did

you mean by a thin ring? A. That is a rubber ring. It is to help hold that in shape.

Q121. It says—"A thin ring of rigid material." You say it was intended to be rubber? A. That's a wire sewed around a ring.

Q122. How heavy a wire do you intend to use? A. I don't remember.

Q123. You cannot tell from the patent what size wire, or whether to use wire?

(Mr. Grier) He doesn't have to answer that.

Q124. Can you point to any place in the patent that tells one to use wire in that place?

(Mr. Grier) He is not bound to answer that.

Q124a. There is not such place?

* * * * *

(24) Q129. What do you regard, Mr. Holtzclaw, as the main feature of your invention of the patent here in suit? I'll ask you again. A. You mean the main features of the flexible cuff. The main feature of the flexible cuff is it allows you to blow air under surfaces heretofore not cleaned by any traveling cleaner and is safe to the operator.

Q130. The flexible cuff is the entire invention you thought you made at the time you filed your application? Just what did you think was your invention when you filed your application? A. It was to clean parts on a frame that heretofore had not been cleaned by any traveling cleaner.

Q131. That was the desirable thing. You didn't invent the desire. You made something which you thought would carry out that desire. What is it you thought of as being your invention at the time you filed the application? A. Just what I said before. A cuff made of flexible material, not injurious to the helper when it was down in the head room and would clean portions of a frame that had not heretofore been cleaned.

(25) Q132. It was simply a flexible cuff. Your whole invention was tied up in the flexible cuff? A. That is right.

* * * * *

(26) Q143. At the time you started on your development work which resulted in the patent here in suit, you were familiar with instances where a flexible nozzle was fastened to the end of a rigid pipe through which fluids were passed one way or the other? A. Yes.

Q144. Give us illustrations of instances where such apparatus was familiar to you. A. You mean where hose is used to conduct air or water.

Q145. That is right, or sand. A. You can see that at home, or anywhere.

* * * * *

(28) Q153. What have you done in your patent in suit that is different from the use of a flexible hose on a rigid conduit as shown in this patent No. 553291?

Objection. (Mr. Grier) We decline to answer.

Q154. Do you know?

Objection. (Mr. Grier) Witness has testified what is done.

Q155. You know what the principle is in your apparatus, don't you? A. I think I do.

Q156. It is the use of a flexible outlet on a rigid pipe through which air is blown. Does that summarize it? Is that the principle of your apparatus? A. Yes.

* * * * *

(29) Q158. Then as I get your idea, it is that because you have used your apparatus on a spinning frame, it should be patentable? A. If I understand the definition of a patent, it is something novel and I claim my patent is novel in its use which has never been used or applied to a textile machine for cleaning.

Q159. Although a rigid pipe with flexible nozzle outlet has been used in other places for that purpose? A. They decidedly have.

* * * * *

DEPOSITION OF ROBERT H. BROWN.

(Defendant's Exhibit U.)

ROBERT H. BROWN, being first duly sworn, deposes and says:

DIRECT EXAMINATION BY MR. WATTS.

* * * * *

(7) Defendant's Exhibit No. 3—Patent No. 2011770 marked for identification.

Q45. Are you familiar with the Hodge patent No. 2128207? A. In a general way.

Q46. Do you know whether Parks-Cramer ever built any cleaners as shown on that patent? A. I do not know.

* * * * *

(10) Q60. I assume you are familiar with the Miller & Becker underframe cleaner patent of the American Monorail Company No. 2516475?

Defendant's Exhibit No. 6—Patent No. 2516475 marked for identification.

A. I have read it, yes, sir.

Q61. Did you ever see one of the devices? A. Yes, sir.

Q62. When did you see the first one? A. I cannot say what the date was.

Q63. Was it this year or last year? A. I would say several years ago.

Q64. Could you say whether or not before the date of issuance of the patent? A. I could not say. I would have to look at my records.

Q65. Can you say from your recollection whether it was before or after the issuance of the Holtzclaw patent here in suit which was October 10, 1950? A. Sorry, I cannot say.

Q66. At the time of issuance of that Miller-Becker patent, Exhibit No. 6, did the Parks-Cramer Company

have any underframe cleaner? (11) A. Not that we were merchandising.

Q67. At that time—up to that time, you had not commercialized the Moore or the Hodge underframe cleaner? A. So far as I know we were not marketing any underframe cleaner. Whether we did ever sell one of the Hodge cleaners I cannot say.

* * * * *

Q71. You heard the witness Mr. Holtzclaw, testify this morning as to the commercial use of the Hodge patent No. 2047558? A. Yes, sir.

Q72. He testified that that had been in use since about the date of the patent, perhaps earlier and is still in use? A. That is correct.

(12) Q73. You agree with Mr. Holtzclaw that the Hodge patent showed outlets from the blower housing which could be adjusted to direct the stream of air to different places on the spinning frames? A. Yes, sir.

Q74. Is the operation of any of the apparatus of this Hodge patent altered in any respect by the addition of the flexible cuff or nozzle shown in the Holtzclaw patent? A. Yes, any change you make in the outlets does have some effect.

Q75. Does the presence of those cuffs alter the operation of the motor of the Hodge device? A. No, it may require to take a little more or less current.

Q76. And the carriage runs the same before and after the cuffs are added? A. Yes.

Q77. And the housing operates the same? A. I can't see that that would make any difference.

Q78. Now those flexible cuffs would operate just the same as they do now whether they were attached to the Hodge metal conduit or the conduits of some other kind? (13) A. To the extent they would deliver air, but the amount and force and direction depends on many factors.

Q79. But air is delivered from the nozzle? A. Yes, sir.

Q80. No matter where that air comes from? A. Any

air delivered to the nozzle would be delivered by the nozzle.

* * * * *

(14) Q88. Also in your affidavit you said that the Walker, Hodge and Lawrence spinning frame cleaners were limited in their cleaning effectiveness. Do you agree with what Mr. Holtzclaw testified to, namely in the Hodge apparatus, Exhibit No. 2, the blower did not completely clean all of the space between the two creel boards? A. I agree with that.

Q89. And you also agree with his testimony of the patent in suit that there was somewhat greater cleaning of that space between those two creel boards? (15) A. Yes, on most frames. It would vary in different frames.

Q90. But it was a difference in degree? A. In some frames it might be. In certain places you get no cleaning from the old style and pretty good with the new. So it is a little more than a question of degree.

Q91. So far as the showing of the two patents were concerned, it was a matter of degree? A. Yes, just a matter of degree.

Q92. You agree with Mr. Holtzclaw that any one looking at a spinning frame over which this Hodge blower was blowing could see whether or not lint was accumulated? A. If called to his attention.

Q93. A mill man wouldn't have to have it called to his attention, would he? A. I am sure I don't know. You'll have to have him answer that.

Q94. If you were in charge of a spinning frame would you have to have somebody call your attention to the fact that lint was accumulating on a certain place on it? A. Not if it was objectionable to have the quantity of lint there that was there.

(16) Q95. There wasn't anything unobvious was there about directing a stream of air at the place on the spinning frame where you wished not to have lint accumulate? A. Well, I don't know the technical meaning of the word "obvious" so I am not sure I can answer that question correctly. I better not try.

Q96. If you saw lint accumulating on a spinning frame in certain places and a blower preventing lint from accumulating on other places, would you want the judge to think it would require inventive skill to see that you could dislodge that accumulated lint if you direct air stream at it? A. I don't believe I would be interested in what the judge thought.

Q97. Well— A. I don't want to be uncooperative but I don't quite understand the question. Perhaps you better phrase it again.

Q98. Here with the Hodge machine running over the spinning frame I understand lint might accumulate at certain places between the top and bottom creel boards? A. Yes, sir.

(17) Q99. Assuming that that is the condition and that it was true the lint accumulated because the air didn't directly strike those places, wouldn't it have occurred to you that if you wanted to dislodge that lint you would have to blow the air in both places? A. It might occur to me I would have to put another cleaner down there to do it.

Q100. I am not concerned with the number of cleaners you use. If you clean one place you can clean another. A. It might occur to me if I had a source of air near the point where it wasn't being cleaned I might clean it by that air.

Q101. But you could clean it regardless of the source of the air? A. Yes, sir.

Q102. Are you familiar with instances in other arts where a rigid tube or conduit was supplied with a flexible tubular outlet and through which fluid or solids were caused to flow? A. There are a number of them. I am familiar with a good many of them.

Q103. Did you ever see one of these Holtzclaw cleaners shown in the patent in suit? A. Yes, sir.

(18) Q104. Just like that? A. Approximately like that. This was made up very early in the development stage and we may not have used commercially this exact shape. It just shows an idea.

Q105. How long did Parks-Cramer make and sell ap-

paratus substantially as shown in the patent in suit? A. I think we began making it from about the time the application was filed. When sales began I don't know.

Q106. But from the time when sales first began, the Company continued for quite a while to make apparatus as shown? A. That was the simple embodiment and they started on that and didn't go further until they determined such things as material and shape, etc.

Q107. By that answer, do you mean it wasn't until after the application was filed that they knew what materials to use in the nozzle? A. All they knew up to that time as I gathered indirectly was that it would be flexible which means it would yield on meeting an obstruction in its path of travel.

* * * * *

(21) Q118. Now also at the time of the hearing on the Motion for Summary Judgment, statements were made orally and also in your affidavit beginning at the bottom of page 6, about using these flexible sleeves of various lengths and shapes to control air as to volume, velocity and direction. Where do you find any reference to any such term in the patent in suit? (22) A. It doesn't spell it out as such here in the patent.

Q119. So far as you know, there is no place in the patent that refers to any control of air? A. Not to that extent. It's only reading between the lines.

* * * * *

Q122. If you were now to take that patent and set out to build a spinning frame cleaner, how would you determine what thickness first of all of the material to use in making the flexible nozzle? A. Well, I would consider what was wanted. If I wanted flexibility and didn't want it too expensive, wanted it to stand up over a period of time, keep its shape reasonably well and deliver air where air was needed. Those are some of the things to be considered and I would see what materials might be (23) available and consider one, advantages and disadvantages and come to a conclusion by process of elimination, perhaps.

Q123. And tests? A. Certainly.

Q124. So it would be necessary to experiment? A. Oh, yes, decidedly.

Q125. Does that same procedure apply to this thin ring referred to in Column 3, line 62 to 64 thin ring 26 of rigid material permanently secured within the folds of the cuff? A. Not so great an extent perhaps, but it would apply. The problems involved in that wouldn't be nearly so great.

* * * * *

(24) Q129. The cleaners of the Hodge patent, Exhibit No. 2, brought air to various parts of the spinning frame? A. They didn't bring it as close or didn't remove as much lint.

Q130. What I was getting at in any event was the difference in degree. More places are kept free of lint with the patent apparatus than with the Hodge device? A. It is more than a matter of degree because the old cleaner had no effect in the underframe.

Q131. That is not disclosed? A. Not specifically.

* * * * *

(27) Q144. Would it be fair to say American Monorail first commercialized the ceiling cleaner? A. I think that would be a fair statement.

Q145. And would you also agree that American Monorail first commercialized the underframe cleaner for example, with its Miller and Becker patent, Exhibit No. 6? A. I think it would be fair to say that underframe cleaners before the Miller were not very satisfactory in comparison.

* * * * *

(28) Q151. You don't know any one who preceded the American Monorail Company in the commercialized use of the traveling loom cleaner, do you? A. I don't know one way or the other.

Q152. This would apply to Parks-Cramer Company also. In other words, do you know whether American Monorail preceded Parks-Cramer? A. Not very definite knowledge. I have my suspicions that they did but I am

not sure. You see, Mr. Watts, we hear these things and see them illustrated but we don't know and have to be careful in answering questions.

* * * * *

TRANSCRIPT OF TESTIMONY.

APPEARANCES:

For the Plaintiff:

MESSRS. TALIAFERRO, GRIER, PARKER & POE,
Attorneys at Law,
400 Law Building,
Charlotte 2, North Carolina,
By: JOSEPH W. GRIER, JR., ESQ.

MESSRS. HEARD, SMITH, PORTER & CHITTICK,
Attorneys at Law,
41 Tremont Street,
Boston 8, Massachusetts,
By: CEDRIC W. PORTER, ESQ.

For the Defendant:

MESSRS. CRAIGHILL, RENDLEMAN & KENNEDY,
Attorneys at Law,
607 Law Building,
Charlotte 2, North Carolina,
By: J. B. CRAIGHILL, ESQ.

MESSRS. RICHEY, WATTS, EDGERTON & MCNENNY,
Attorneys at Law,
520 Union Commerce Building,
Cleveland 14, Ohio,
By: B. D. WATTS, ESQ. *and*
CHARLES T. WATTS, ESQ.,
QUIGG LOHR, ESQ.,
13107 Athens Avenue,
Cleveland 7, Ohio.

* * * * *

(10)

WILLIAM B. GRAINGER, called as a witness by and on behalf of the Plaintiff, being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY MR. GRIER.

* * * * *

(11) Q. Can you give an estimate as to the percentage cost of the labor in a spinning room which is devoted to cleaning? A. The spinner is generally considered to spend approximately half of her time—that is, prior to the use of any type of automatic traveling cleaner—approximately half of her time must be devoted to cleaning.

* * * * *

(12) Q. Prior to the advent of these traveling cleaners which (13) we see indicated in these photographs, how was the cleaning done? A. The cleaning prior to the use of automatic traveling cleaners was performed by hand, largely: by actual hand labor in wiping the surfaces; picking the lint off by hand where it would accumulate. Sometimes compressed air was used to blow off parts of the frame, such parts as a strong force of air would not cause damage or be detrimental. Sometimes brushes were used, hand brushes. Picks were used to move accumulations that had matted up. And I have seen some hand fans used to just fan the lint off generally.

* * * * *

(44)

CROSS EXAMINATION BY MR. WATTS.

Q. You stated you had an engineering degree. What degree do you have? A. B.S. degree in engineering. Bachelor of Science in industrial engineering.

Q. I see. I understand you to say that before the advent of either the Walker or the Hodge traveling cleaner about one-half of the time of the spinner was used in cleaning the spinning machines? A. Yes, sir.

Q. How much of that time was saved by the Walker and the Hodge cleaners? A. The amount of time she herself had to spend in (45) cleaning was reduced by approximately fifty percent, or cut to approximately one-half.

Q. Down to 20 percent of her time? A. Well, I will say nearer 25.

* * * * *

(47) Q. You said that before the advent of the Hodge and Walker cleaners, compressed air was used to clean the frames. Was that piped in through pipes and then released through a flexible hose, for example? A. It was—Yes, sir, it was piped in to the room to fixed locations in the room, and a hose, very much like a common garden hose, it has been my experience, was used. That sometimes had a metal nozzle on the end, and the air was directed chiefly in the lower areas of the frame for blowing out the lint under there.

Q. Did they use metal pipe for piping the air in? A. That was brought to central locations in the room, and then these long hoses, 50 feet or maybe 100 feet or so. They are still used.

Q. What parts of the frame did you say were not reached—Let me limit that. What parts of the creel portion of the spinning frame did you say were not adequately cleaned by the Hodge machines? A. The areas immediately beneath the creel boards here and here, and the bottom creel board.

* * * * *

(48) Q. Do you know why it was that Hodge didn't satisfactorily clean under those creel boards? A. My experience with the Hodge cleaner was that the air being directed downward did not curve inwardly and pass transversely enough to get into those areas.

* * * * *

(51) Q. And some of the air from those rigid nozzles also struck the spools of roving between the creel boards,

didn't it? A. Yes, sir. You could get some to strike this portion here.

* * * * *

Q. Could you determine where the air stream was striking the creel boards and the other parts of the creel? A. Yes, sir. It was possible to determine in a very good manner where the air was striking.

(52) Q. Just a matter of looking at it, wasn't it? A. Not altogether. In adjusting these outlets, we would—I have myself attached a string to the inside of the outlet here, and with the air coming from the outlet, the string would follow the air stream; and that is the best indicator I have had on the Hodge cleaner. There are other devices, but that is the one I use.

Q. Couldn't one simply by looking determine where the air stream didn't strike the parts of the creel? In other words, where the lint accumulated? A. It was possible to walk down or through a spinning room and by observing the creels you could see the accumulations of lint on the tapers of these bobbins under the creel board and under the middle creel board here, and there would be accumulations of lint on them. That was evidence that the air was not getting to them.

Q. You could see that simply by looking at it? A. You could see that by eye.

Q. Are you familiar with the patent in suit? A. No, sir, I am not familiar with it.

Q. What does Exhibit 15 show? A. This is 15?

Q. Yes, that's 15. A. This shows the adaptation of the Holtzclaw improvement, the flexible extension here as applied to the Hodge unit here.

* * * * *

(64) Q. What was the term or name you applied to the apparatus, the cleaner, of Exhibit 15? Was that known as the Holtzclaw machine? A. I don't believe I can recall what we did refer to it as.

Q. Did you continue to call it a Hodge cleaner after you applied the flexible cuffs to it? A. It was a Hodge

cleaner with the Holtzclaw adapter and extended flexible sleeve.

Q. It was a Holtzclaw sleeve on it? A. Yes, sir.

Q. How did the Hodge apparatus of Exhibit 1 compare with the apparatus of Figure 2 as far as the functions of the motor were concerned? A. The functions of the motor I don't believe were changed. It was still propelling the unit along the track and generating the blasts of air.

Q. And the air stream created by the fan in the Hodge apparatus of Exhibit 1 was blown down through the outlet conduits 14 and 15 just the same as it was in the case of the cleaner of Exhibit 15? A. Yes, sir.

Q. And when the air reached the lower end of those outlets 14 and 15, it was then conducted on down through the (65) rigid sections 18 in each of those instances, each of those machines? A. Yes, sir. Part of it went through 18, and part of it would go through 19 in this photograph.

Q. But in the Hodge machine of Exhibit 1, all of the air went through the two rigid sections at the lower end of each of the outlet conduits? A. Yes, sir.

Q. You say when you came to this Holtzclaw flexible cuff, you sold them to people who were using the Hodge cleaners of Exhibit 1? A. Yes, sir.

Q. And there they were used to replace two of the rigid sections of that cleaner? A. Yes, sir, two of the rigid cuffs.

* * * * *

(66) Q. That carriage was propelled along the track in both instances—that is, Exhibit 1 and Exhibit 15—by the same motor; and the fan was rotated in the same way in each instance; and the air was blown down through the outlet conduits 14 and 15 the same way; and it was discharged through those rigid sections 18 in the same way, whether there was a flexible cuff on there or not. Isn't that true? A. Yes, sir, they discharged from that outlet.

Q. So that adding the flexible cuffs, or substituting them for rigid sections, didn't change the operation of the

cleaner? A. It still performed the mechanical function of traversing the track and generating the air.

Q. Blowing out— A. Blowing it out through the outlets.

Q. Did plaintiff ever make a so-called Holtzclaw machine as contrasted with this Hodge machine, or these two exhibits 1 and 15, with the flexible cuffs attached, or do you still make and sell that Hodge-type cleaner? A. It would be made if there were calls for it.

* * * * *

(69) Q. But when you were providing a customer who had a Hodge cleaner with flexible cuffs 19, did you put them on for him or tell him how to put them on? A. Sometimes I would put them on. In a few instances I did. Our erectors would install them, and I believe sometimes the mill people themselves, following written instructions, would make the installation.

Q. Did you in every instance so position those flexible cuffs that the lower outlet end was just about slightly below the upper creel board as shown in Exhibit 15? (70) A. Yes, sir.

Q. And that was so that the flexible cuff would be extended toward the creel and the packages of roving so as to blow air across the machine to the creel? A. Yes, sir, direct air under and in this area here. Under this creel board here and up on this side.

Q. And those flexible cuffs extended toward the machine by reason of that curved-in lower end? A. Yes, sir. This curved end extended in toward the machine.

Q. And because it did curve inwardly towards the machine, it was able to direct the currents of air against the machine and blow the lint off the packages of roving and the two creel boards? A. If it was directed in this area, the top tapers of the roving and the under-side of the creel board.

Q. And that was standard procedure, wasn't it? A. At that time.

* * * * *

(72) Q. I see. About the time you began to sell that device in Exhibit 4, did you let up on the sale or promotion of the flexible cuffs 19 we have been talking about? Flexible cuffs 19 of Exhibit 15, we will say? A. Yes, sir. The demand was greater for this Holtzclaw cleaner here than for the Hodge cleaner to which the (73) Holtzclaw development was attached, because this produced so much more in cleaning.

Q. How long after Exhibit 4 was put on the market did plaintiff come out with Exhibit 14? That is the one there. A. I couldn't say just how long it was. The best I can recall, it wasn't very long.

Q. Do you continue to sell both of them now, or have you just let up on the sale of those cleaners of Exhibit 4? A. If this would better fit a need, this would be used. This one works a little better than this. Therefore, this is used in some installations.

Q. The device of Exhibit 14 you have just said works better than the one of Exhibit 4? A. Yes, sir.

* * * * *

(77) Mr. Watts: First, I will ask the Clerk to mark the tag as Defendant's Exhibit B.

(Defendant's Exhibit B is marked for identification.)

Mr. Watts: I will attach this to the apparatus.

Q. (By Mr. Watts) Now, Mr. Grainger, would you use that red pencil and apply to this Exhibit B reference numerals such as we have been putting on the photograph exhibits? Use the numeral 12 to indicate the fan casing. A. (Witness marks Exhibit B.)

Q. And the numerals 14 and 15 to indicate the rigid outlets leading downwardly from that casing.

(Witness marks the exhibit.)

* * * * *

(78) Q. Now, let me see if you have ever seen a device such as this Exhibit B? A. This is Exhibit B?

(79) Q. That's right. A. Yes, sir, I have seen this with the flexible sleeve attached.

Q. Without the flexible sleeves and with the two rigid sections 18 at the end of each outlet conduit, you would have exactly what you have in Exhibit 1, would you not? A. Yes, sir. That's right, with these—with another one of these here on either side it would be the same as this thing over here.

Q. And by "these" you mean the rigid sections 18? A. The rigid sections, yes, sir.

* * * * *

Q. Now, assume you went to that customer and sold him on the idea of using the flexible cuffs and sold him some of the cuffs. (80) A. Yes, sir.

Q. Then one of these rigid sections 18 on each side would be removed and the section 18A would replace it, and to 18A in each instance you would attach a flexible cuff. A. Yes, sir.

Q. And that is what you did do for a period of time until the demand fell off because of your making these devices of Exhibits 4 and 14? A. Yes, sir.

Q. And in each instance the flexible cuff was a tubular, thin, hollow, tubular article open at each end and turned inwardly at the lower end so that the air would go across the machine and remove lint from the creel? A. Yes, sir.

* * * * *

(95) Mr. Watts: Just before we close, if your Honor please, let me show once more the difference, if any, between the regular Hodge cleaner of Exhibit 1, and the Holtzclaw cleaner of Exhibit 15.

Q. (By Mr. Watts) The only difference, as I get it, is that in Exhibit 1 you have two rigid sections at the lower end of each outlet conduit? A. Yes, sir.

(96) Q. And in Exhibit B here, you have the same Hodge cleaner but with two flexible—that is, partly flexible and partly rigid sections—instead of four rigid sections? A. Yes, sir.

Q. So you take off two of the rigid sections 18 in the Hodge cleaner.—With the four rigid sections on, it's a Hodge cleaner? A. Yes, sir.

Q. You take off two of them and put on the flexible cuffs and it becomes the cleaner of the patent in suit? A. I'm not that familiar with the patent in suit. If you added the Holtzclaw flexible sleeve to the Hodge cleaner—

Q. So that, in a word, without the flexible cuff it isn't the patent in suit; and with them, it is? A. Yes, sir, if it has the four 18's as designated 18—rigid metal outlets.

* * * * *

RE-DIRECT EXAMINATION BY MR. GRIER.

Q. I believe you testified that the horse power of the motor in the Plaintiff's Exhibits 4 and 14 was increased over the horse power motor in the Hodge cleaner? A. Yes, sir.

(97) Q. What was the purpose of increasing the horse power of the motor? A. Since there were so many more outlets provided to clean more places on the spinning frame and do a more effective job, greater air was needed, a larger amount of air was needed so that required a larger power plant, or motor.

Q. Do you know, as between the Hodge cleaner and these cleaners indicated as Exhibits 4 and 14, whether there were any changes made in the fan structure? A. Yes, sir, there was some difference made in the fan structure.

Q. What was the purpose of the changes made there? A. That was also to assure a greater delivery of air on the surfaces to be cleaned.

Q. Would it be correct, then, to say that more air was required to operate the cleaners indicated by Exhibits 4 and 14 than by the old Hodge cleaner? A. Yes, sir, it was.

Q. Would it be correct to say the Hodge cleaner did not put enough air to have supported the outlets as indicated on those Exhibits 4 and 14 cleaners? A. I don't believe so.

* * * * *

(126) Mr. Watts: If your Honor please, I now renew my objection to a number of these exhibits and extend it to certain other ones. I object to receipt in evidence of Exhibit 1, Exhibit 3, Exhibit 9, Exhibit 8, Exhibit 13, Exhibit 14—

The Court: 14 is the plaintiff's patent, is it not?

Mr. Watts: No, sir. That is the so-called "elephant" embodiment of the Holtzclaw device.

The Court: 14?

Mr. Watts: 14 is the one we used this morning.

The Court: That is right. You said that was the patent of what you were manufacturing now and which you allege is the thing which he infringes.

Mr. Grier: That's right, and he says he doesn't think it is.

The Court: I had it marked as Plaintiff's patent in suit.

Mr. Grier: That's the embodiment of it.

The Court: In other words, that is what you claim (127) you were given authority to have as the whole of the patent from the Patent Office.

Mr. Grier: That's right.

The Court: And that is the thing you say he is manufacturing now that infringes, or the similarity of the thing he manufactures now infringes what you claim is your patent?

Mr. Grier: Yes, sir.

The Court: All right, sir.

Mr. Watts: Then I object to Exhibits 24, 25, 26, 27, 28 and 30, provided the Exhibit 30 is Patent 2,063,874.

The Court: That is what he has it listed down.

Mr. Watts: Ours isn't marked the same way.

The Court: I will take your objections, and I will take them under advisement.

Mr. Watts: All right.

The Court: I have marked them here in red pencil those objected to by the defendant. Ruling reserved. All right, sir.

ROY H. TODD, called as a witness by and on behalf of the Plaintiff, being first duly sworn, was examined and testified as follows:

* * * * *

(130)

CROSS EXAMINATION BY MR. WATTS.

Q. What type cleaners did you say you sold last year that constituted 90 percent of your business? A. That was the Holtzclaw, the flexible-type sleeve cleaner.

Q. Let's pick out one of the exhibits—

The Court: 14.

Q. Was it the Exhibit 16 type? A. Yes, that's right.

Q. What about Exhibit 4? A. That's practically the same type.

The Court: That question you asked him, would you mind making that the Exhibit 14-16 type, because they are the same thing?

Mr. Watts: Oh, yes, sir. Surely.

The Court: 14-16 type, because one has the operator, (131) and it will keep me from getting confused in the matter.

Q. (By Mr. Watts) Did your company sell any cleaners last year of the type of Exhibit B? A. Nothing except replacements.

Q. Nothing except replacements? A. And repairs.

Q. Did you sell any sleeves or cuffs last year? A. Of that type?

Q. Yes. A. Well, I couldn't say. I don't know.

Q. You said that last year you estimated that the cleaners you sold reduced the labor cost to the customer, I assume, to the extent of a million and a half dollars; is that right? A. Yes, sir.

Q. What basis did you have for that? A. The basis for that was the information we get from the managers and the superintendents of the textile plants we sold equipment to.

Q. What is the form of that information? A. Well, as a rule, letters, or oral to the salesmen.

Q. Do you have any of those letters here? A. No, sir.

Q. What did they say? A. Well, I'm not too familiar with that, because usually (132) it is usually taken up in our Engineering and Sales Departments. That's handled in our Sales Department, and I don't handle sales.

Q. And that answer you gave on direct examination is purely hearsay? A. Well, it's what we estimate. I am the Manager and Director of the company. I know something about the operation of it.

Q. But your estimate is based on something that somebody told somebody in your organization? A. Well, yes. Well, with letters that came by my desk, yes, from managers and superintendents in mills.

Q. But you still don't know if the facts given to you on which you based your estimate were true? A. (No response.)

The Court: (To the witness) You only know just what they said?

The Witness: No, I wouldn't know whether they were, no, sir.

Q. What was the basis on which you estimated that million and a half dollar saving? Was it over hand cleaning? A. Yes, and also the efficiency of your machine. You know, when you have a machine cleaner, you have more efficient yarn. In other words, the yarn has better quality, and you save that. And you also save by having an operator (133) to operate both sides of the spinning frame. That's what we save on it; because this type cleaner practically does a complete job of cleaning.

Q. But the basis for your comparison was hand labor? A. Not altogether, you see—

Q. What did you use as your basis? A. We used as a basis because we could use the machine.

Q. As compared with what? A. Of course, hand. It was hand after that—

Q. Hand operated? A. Yes.

* * * * *

LESTER WHITENER, called as a witness by and on behalf of the Plaintiff, being first duly sworn, was examined and testified as follows:

* * * * * —

(137)

CROSS EXAMINATION BY MR. WATTS.

Q. Mr. Whitener, I am a little confused about this so-called Hodge type cleaner you were talking about. Is it the apparatus that is shown by Exhibit 1? A. Yes, I think so.

(138) Q. That's what you have been having in mind when you testified just now about the results you obtained with the Hodge type cleaner? A. Yes.

Q. Here is Exhibit 15. Is that what you call the Holtzclaw type? Or did you call it? A. I don't think I called it. We have had that type of equipment like this here.

Q. And is it true that this week we obtained from your plant this Exhibit B? A. Yes.

Q. And it was in the scrap heap at that time? A. Yes, it was.

Q. Now, have you any figures that would show the saving in cleaning time which was made by the apparatus of Exhibit 15 over the apparatus of Exhibit 1? A. This as opposed to this?

Q. That's right. A. I don't have such a figure, no, sir.

Q. Was there a noticeable difference in labor, cleaning labor, when you went from the cleaner of Exhibit 1 to the flexible nozzle cleaner of Exhibit 15 and Exhibit B? A. On this particular picture I don't think there is a great deal, but the one we have now, there is a great deal.

Q. Let's stick to these two: Exhibits 1 and 15. As I (139) get your testimony, there was no appreciable difference in saving in cleaning time between those two cleaners? A. I don't have any figures on that.

Q. It has been testified that with the flexible cuffs of Exhibit 15 and Exhibit B, a little better cleaning was obtained between the middle and the top creel boards. Was that your experience? A. I think so, yes, sir.

Q. Was it also your experience that there was more lint accumulation between the middle creel board and the bottom creel board when the flexible cuffs of that exhibit were used? A. Was there more accumulation in the middle than in the top?

Q. That's right? A. I would think so.

Q. You are sure of it, aren't you? A. Yes, sir.

Q. The contrast you gave under examination by Mr. Grier was between the cleaner of Exhibit 1, the Hodge-type, and the cleaner of Exhibit 14. Is that correct? A. Labor saving?

Q. Yes. A. That's right. This is the one we saved the labor with.

Q. Yes. Exhibit 14. (140) A. Yes.

Q. When you put in the cleaner of Exhibit 14, did you discard the cleaner of Exhibit 15? A. Some of these, as I remember it, were reworked. I don't know if you want to call it the housing or the hood or the distributor part, was changed to take care of the outlets underneath.

Q. In other words, you— A. We used the motor part and the fan part of it.

Q. Did you put more outlets? A. Yes.

Q. Instead of the four you had here on Exhibit B, you added several? A. Yes. They changed the housing and the distributor part of it.

The Court: That is 15 you are looking at now, is it not?

Mr. Watts: Yes, your Honor.

Q. Now, the comparisons in saving of cleaning time were made by you, also between the cleaner of Exhibit 15 and of Exhibit 14? A. Yes. That's when I realized the greatest saving.

Q. So the saving in time you talked about— A. Was this type.

Q. Was attributable to 14 and it was over and above (141) anything in Exhibit 1 or 15? A. Yes.

* * * * *

RE-DIRECT EXAMINATION BY MR. GRIER.

Q. Referring to Plaintiff's Exhibit 15, you stated that the cleaning was better beneath the top creel board than beneath the second creel board?

The Court: With this type?

Mr. Grier: Yes.

A. Yes.

Q. Can you explain why that was? (142) A. Because the air was not directed into that area properly. That is the only thing I can think of.

Q. What effect, in respect to the hand cleaning underneath the top creel board, resulted from the addition of these flexible cuffs? A. Of this type?

Q. Yes. A. I don't have that information.

Q. Well, I didn't ask in terms of specific labor savings. You stated that the area underneath the top creel board was better cleaned. A. I think I would have to say that, not in terms of dollars and cents, but we had less lint on that roving, which gives a better quality product; but in dollars and cents, I have no figure.

* * * * *

S. M. CAUBLE, called as a witness by and on behalf of the Plaintiff, being first duly sworn, was examined and testified as follows:

* * * * *

(151)

CROSS EXAMINATION BY MR. WATTS.

Q. Mr. Cauble, you have been testifying about the old type, or the Hodge type. What do you mean by that? A. (No response.)

Q. I show you Exhibit 1 and ask you if you referred to that as the old type? (152) A. That's right. That's what we call the old type.

Q. That is the old Hodge type? A. Yes, sir.

Q. How do you refer to Exhibit 14? Is that the new type? A. That's right. We call that the new type, Mr Watts.

Q. And your estimated savings in labor cleaning, hand labor, was based on the use of the Exhibit 14 device over and above the device of Exhibit 1? A. That's exactly right.

Q. In all your experience, have you had any cleaning apparatus like Exhibit 15? A. No, sir, we did not.

Q. Never had any like that? A. No, sir.

Q. And that is the same as Exhibit B with the flexible nozzles on each side? A. We never had that.

* * * * *

(154) Q. So the only advantage, then, in using the flexible nozzle in Exhibit B and Exhibit 15 over the old type Hodge cleaner would be that you removed a little lint from between the upper and middle creel boards? A. Well, you have got your air directed to the place where it keeps it clean at all times.

* * * * *

(162)

E. Forrest Kulp, called as a witness by and on behalf of the Defendant, being first duly sworn, was examined and testified as follows:

Direct Examination by Mr. Watts.

Q. Please state your full name. A. E. Forrest Kulp.

Q. What is your age and occupation? A. My age is 47. I am a sales engineer and District Manager for the American Monorail Company covering North Carolina. Located in Charlotte.

Q. How long have you been employed by the American Monorail Company? A. A little over ten years.

Q. How long have you been stationed in Charlotte? (163) A. A little over ten years. Since January, 1946.

Q. Since you are sales engineer for the company, I presume you are familiar with their various textile cleaning equipment? A. I am.

* * * * *

(174) Q. On Monday of this week, we were out at Ranlo, I believe? A. Yes.

Q. At what plant? A. A. M. Smyre Manufacturing Company.

Q. And did you see out there any apparatus like Plaintiff's Exhibit 4? A. No, we did not.

Q. Did we see an apparatus like Plaintiff's Exhibit 14? A. Yes, we did.

Q. Did you make any measurements? A. Yes, I did.

Q. What did you measure? A. We measured the height of the metal part of the nozzle, the long trunk, the height of that metal to the floor.

Q. What was the distance? A. Approximately five feet eight and a half inches.

Q. That part you are referring to there is the rigid section at the extreme left side of the apparatus of Exhibit 14? A. That's right.

(175) Q. Did you observe whether or not that rigid section was above or below normal head height? A. That is the reason I measured it, because it was right down around my eye level, and I wanted to see what it was in feet and inches.

* * * * *

(176) Q. You are familiar with the patent in suit, at least to the extent of knowing what the figures show? A. Yes.

Q. Could that apparatus clean, or did it clean below the middle creel board? A. Not in the creel area itself. It did some cleaning between the creel and the roll stand, and the roll stand somewhat, and some on the guides.

Q. Did it do any appreciable cleaning along the side of the frame? A. No, it didn't.

* * * * *

RE-DIRECT EXAMINATION BY MR. WATTS.

* * * * *

(192) Q. From 1947, say, December 12th, when the application for the Holtzclaw patent in suit was filed, until

about a year ago, did Parks-Cramer, to your knowledge, have any device which would clean within the underframe of a spinning frame? A. Not to my knowledge. Never heard of it or saw it.

* * * * *

(193)

ROBERT C. SESSIONS, called as a witness by and on behalf of the Defendant, being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY MR. WATTS.

Q. Mr. Sessions, state your full name, age and residence. A. Robert C. Sessions. I am 58 years old and live in Lakewood, Ohio.

Q. What is your occupation? A. I am a consulting mechanical and electrical engineer, and I also do part-time work for the National Advisory Committee for Aeronautics.

Q. Are you a registered Engineer and certified to practice as such in the State of Ohio? A. Yes, I am a registered, professional engineer in the State of Ohio.

Q. Will you state what qualifications you have in support of your testimony before the Court here? That is, what qualifications have you that make your testimony of assistance to the Court? (194) A. I studied engineering and graduated with a Bachelor of Science degree from the Worcester Polytechnic Institute in 1919. The next year, I had a fellowship to continue my studies in Sweden; and since that time, I have been practically continuously engaged in matters pertaining to mechanical and electrical engineering—the design and operation of machinery processes. I am familiar with the problems relating to the handling of air. I am familiar with the various types of cleaning apparatus. I have, on several occasions, a good many occasions, testified in engineering matters in patent litigation in the Federal Courts. I have been called upon to analyze and interpret patents, both in connection with

my prior practice and in connection with my other employments during the course of the past thirty years or more.

I am a member of the American Society of Mechanical Engineers, the American Institute of Electrical Engineers.

The Court: I imagine he has laid out his qualifications sufficiently to be found by the Court as an expert, so I make such finding.

Mr. Watts: May I ask just one more question?

The Court: Yes, sir.

Q. Have you had occasion to examine or to observe spinning frames in operation? A. Yes, I have.

* * * * *

(195) Q. Will you describe the structure, mode of operation and results of the device which I will ask the Clerk to mark for identification as Defendant's Exhibit F.

(Defendant's Exhibit F is marked for identification.)

A. The apparatus of Defendant's Exhibit F is a cleaning unit made by the American Monorail Company. It uses a rotary blower to provide a source of air under pressure. The unit itself is not power-driven. The motor of this unit does not drive the unit along the track. It is pulled along as a trailer by another power-driven unit, that power-driven unit being one of these Tri-rail, so-called Tri-rail cleaners, of the American Monorail Company, which is shown in Defendant's Exhibit D.

If I may go over to this exhibit I might point out more easily there.

The Court: Yes, sir.

The Witness: As I explained, the blower is driven by a motor that is in the lower part of the casing in the center part of the machine. The unit is carried on a trackway, (196) which consists of three tracks. The air is forced out sidewise, laterally first and then downwardly, through these black ducts or tubes, to holes in the side of the tube. The holes are on the side toward the machine in each case,

and are located: first, the highest hole is at a point slightly above the ring rail, and the other holes are located at points from there on down, to be arranged for the purpose of directing air toward the ring rail section and the underframe area of the machine, or of the spinning frame.

These ducts, which are made of synthetic material, are square—about five inches square. I have a cut-away piece of one of them which I will refer to. This piece has had some newspaper stuffed in it to hold it open, but the construction may be seen. Each side, in the front and back directions, besides—

Q. Is in the direction of travel? A. In the direction of travel of the machine, have pockets in them extending through the entire length, and in those pockets are placed fiber-board stays, which are, of course, stiff and rigid in one direction but which will bend in the other direction. As the result of that construction, these ducts or tubes are held fairly rigidly from movement toward and away from the spinning frame but can yield in the direction lengthwise of the spinning frame or parallel to the movement of travel. When yielding in that manner, (197) they can also twist some to one side, but they, when not being bent or twisted in normal operation, that is to say, when they are not striking an obstruction of any sort, they will tend to bend, they are rigid and firm in the direction transversely of the machine. They resist movement toward or away from the frame.

Q. Let me interrupt just a moment.

Mr. Watts: Would the Clerk please mark this portion of the tube as Defendant's Exhibit "G" and let the record show that that exhibit includes the two fiber stays which fit in the pockets of that exhibit.

(Defendant's Exhibit G for identification is marked.)

Q. You may proceed. A. I believe I explained, but I am not sure, so I will say it again in any event: There is on each side of this unit a single square outlet duct made of metal, and attached to that there is a single duct made of

a plastic material. That duct, of course, also includes the fiber stays, stiffening stays.

Q. Would you discuss the operation and results of the apparatus Exhibit F and— A. I explained the operation. I think as far as the results are concerned, the result or results are the cleaning of the underframe portion externally and internally of the (198) spinning frames.

Q. Now, does it—Have you observed the direction of air currents issuing from these holes along the sides of the tubes, flexible tubes? A. Yes. The air issuing from those holes moves slightly downwardly. Actually, at about an angle of—from the top holes the air moves down at an angle of between thirty and forty degrees, downwardly toward the machine as well as—

Q. Vertically, of about thirty degrees? A. At an angle of about thirty degrees to the horizontal angle. Between thirty-five and forty degrees to the horizontal.

Q. And from the metal part, the casing, down to the first hole the stream of air is going vertically downward? A. Yes, that's right.

Q. And these tubes are substantially vertical? A. That's right.

Q. And when the air comes to the first hole, it tends to continue on down and towards the machine? A. Yes, it goes toward the machine and downwardly.

Q. What is the direction of the air at the next lower hole? A. That air also—of course, that is a wider nozzle, so it's a wider stream of air—but it also is moving downwardly as well as toward the machine when it passes out of (199) that hole, when it passes out of that hole.

Q. Did you notice whether or not there was any cleaning of the upper creel board to this apparatus? A. In my opinion there is no cleaning, and I didn't notice any cleaning of the upper creel board.

Q. And does that apply to the packages of roving hanging from the upper creel board? A. Yes.

Q. What about the middle creel board and the packages of roving hanging from that? A. The same comment would apply to that.

Q. Where does most of the air issuing from the topmost hole in that vertical pipe strike the machine or the spinning frame? A. It strikes the machine—I think the center of the blast of air strikes the machine about at the little rings on each side.

Q. Thread guides? A. The thread guides, yes.

Q. About here? A. Yes.

Q. Where does it go then? A. Then it spreads out crossways and enters the machine.

Q. Are you familiar with the patent in suit? A. Yes.

(200) Q. You have heard its structure and operation and results described? A. Yes.

Q. (Continuing)—In the testimony here? A. I am not sure I have heard very much, but I mean, I have heard the testimony here. To whatever extent that has been described, I have heard that, yes.

Q. Will you describe that with respect to the structure, operation and results of the device shown and described in that patent? A. This Holtzclaw patent in suit No. 2,524,797 is described as being a machine of the Hodge type. The patent to Holtzclaw, in the first column at line 34, explains that "Typical traveling cleaning mechanism and the arrangement thereof of the character above described are disclosed in the following patents granted to William B. Hodge, Nos. 2,047,558 July 14, 1936, 2,128,207 August 23, 1938, and 2,184,880 December 26, 1939, and therefore need not be illustrated and described in detail as the present invention relates only to improvements in the mechanism for directing the blasts of air delivered by the fan."

In other words, this is a traveling cleaner such as is shown in the Hodge patents mentioned there, and I have compared the drawings of this Holtzclaw patent with those Hodge patents and find that the fan structure shown is (201) substantially identically the same as is shown in some detail in the Hodge Patent 2,184,880. It is also generally the same, but not quite as closely the same, to the Hodge Patent No. 2,047,558.

The inventor Holtzclaw here continues his explanation and tells how the Hodge cleaners described in patents he has just mentioned and which he says are the same as his invention here, his cleaner here, except for the improvement mentioned there: have two adjustable sleeves or nozzles at the end of each air conduit which extends from the fan casing.

In other words, your Honor will remember the photographs you have seen previously of the Hodge cleaner which showed a fan casing and outlet conduits substantially the same or the same as shown in this Defendant's Exhibit B, in which the outlet conduit on each side is, as Holtzclaw explains here, provided with two adjustable outlets. In other words, there are two outlets on the side, and that's what Holtzclaw is describing here in the part of his patent I have just referred to.

And he continues and says—this is about line 49 of column 1, starting at line 47. (Reading) "* * * one of which directs the blast of air downwardly upon the side of the machine therebeneath and the other of which directs the blast of air transversely across the machine."

* * * * *

(202) The Witness: And he continues to explain how these prior Hodge machines operated by explaining that because the nozzle terminates above the top of the machine it's "ineffective in satisfactorily preventing deposition or accumulation of lint and the like upon rigid parts of the machines not located in the direct paths of the blasts of air, or upon mechanism for the material being treated located closely therebeneath."

And then he points out that the particular problem was the cleaning of the lower face of the creel board. That's at lines 6 and 7 of column 2.

Mr. Grier: Where do you find the word "particular"?

The Witness: I don't find that. (Reading) "* * * and upon the spools of roving located closely therebeneath * * *" He makes his particular reference to that. Perhaps that's a more exact statement.

Now, in this connection, I would like to refer next to column three on the next page, and here the construction of this Holtzclaw patent is described, as far as the outlet conduits and the mechanism for directing the air is concerned. This starts at line 22, and in the paragraph beginning at (203) line 22, he explains that: (Reading) "Each of the conduits 14 and 15 has preferably adjustably secured * * *."

I think if I could have one of these enlarged charts we have here, I could refer to it more carefully. (A chart is here provided for the witness.)

This is an enlarged photograph of figures 1 and 2 of the Holtzclaw patent in suit, and I have colored parts of those enlargements to more clearly bring out and make apparent the various parts of the machine which I want to refer to particularly. So the point I am referring to here states that: (Reading) "Each of the conduits 14 and 15 * * *." Those are the two side legs or branches which come down from the center fan section or fan casing.

The Court: That is the light blue?

The Witness: That is in light blue, yes. (Reading) "* * * has preferably adjustably secured to its lower end a downwardly extending sleeve or nozzle 18 * * *" and that is the so-called rigid sleeve or nozzle, colored in red here on the chart. (Reading): "* * * for directing the blast of air therefrom downwardly upon the side of the machine therebeneath * * *." Your Honor will see downwardly extending lines with arrows on them showing the general direction of the air from those two nozzles 18. There is one of those on each side of the machine. The one on the right-hand side in these two figures is behind the flexible nozzle 19, so only (204) a tiny portion of it shows here. You see that part of it colored red there. That is the end of the nozzle 18 on the right-hand side; so there is one downwardly directed rigid nozzle or rigid section on each side.

And the specifications continue. (Reading): "* * * and also a downwardly extending sleeve or nozzle 19 for directing a current of air transversely across the machine."

On each side there is also a flexible outlet section attached to what are called outlet conduits 14 and 15, and the flexible section I have colored in purple.

And the patent shows arrows showing the direction of air currents coming from those flexible nozzles and how that air is directed transversely across the machine so that it hits the top of the upper spools of roving and will flow under the upper creel board.

The patent continues. "In the present invention either or both of the nozzles may be of highly flexible material adapted to yield upon impingement of an obstruction in the path of travel of the nozzles. Preferably the nozzles 18 of the machine are of rigid material and terminate at such height as not to engage an obstruction such as an operator passing through the aisle between groups of machines. The nozzle 19, which conducts the blast of air transversely of the machines, is of highly flexible material * * *."

(205) I might stop here just a moment to explain that this patent mentions the use of "highly flexible material" in several places. The degree of flexibility is not explained in the patent, and it seems likely that to determine the proper flexibility experimentation would be needed because of the rather indefinite statement as to what is or is not highly flexible material.

Q. Is that term "highly flexible material," or is that element so described, an essential one in the combination? A. It is the same element that is carried forward in Claim 6 of the suit.

Q. No, I mean, structurally isn't that the heart of the— A. Oh, yes, that's the sole change from the prior Hodge patent.

Q. And it is described only by the term "highly flexible"? A. That's right.

Q. Does the patent also say what material might be used? Does it say anything about the material? A. Yes, it does.

Q. What? A. It states that the—Before I come to that, I might continue the sentence I am on.

Q. Go right ahead. A. And I will continue the portion I was reading, which begins on line 44, column 3. (Reading): "* * * and extends (206) well below the end of the nozzle 18 and is provided with an inwardly curved and preferably tapering end portion * * *."

Your Honor can see the portion colored purple on the chart how this end portion tapers to become slightly smaller at its outlet end and is also curved inwardly to direct the air inwardly across the machine at that level. (Continuing to read):

"* * * which is positioned at such predetermined height as to direct the air inwardly beneath the creel board * * *."

Now, I want to call particular attention to that, because in the patent drawings—and I refer now to figure 1 of the patent drawings—two of the creel boards are numbered. The upper creel board is numbered 4, and the patent calls the creel board which we here in this case have been calling the middle creel board, the patent calls it the lower creel board; but in any event, a different numeral is applied to that middle creel board. It is marked 3. So that at this point in the patent he is explaining that the inwardly curved flexible nozzle 19 on each side is located beneath the creel board 4, i.e., beneath the upper creel board. (Continuing to read):

"* * * thereby to prevent accumulation of lint upon the under face of the creel board or upon the spool of roving 5 and the strand 20 * * *."

Strand 20 is the strand leading from the upper spools (207) of roving. It's marked here on figure 1 of the patent.

Now, regarding the material of the cuff 19, the highly flexible cuff, paragraph starting at line 56 states: (Reading):

"Preferably the sleeve or nozzle 19 comprises a cuff of suitable woven fabric which desirably is impregnated with suitable material to make it impervious to the blast of air passing therethrough and is provided with means for retaining it in expanded condition."

Now, the material mentioned there seems to be generally the material which seems to comply or seems to agree with or corresponds to the material which was used on this Holtzclaw device, which is defendant's Exhibit B.

Q. Does the patent describe any particular material except to say that it's "woven fabric"? A. No, it doesn't describe any particular material, and it does not describe or does not tell how flexible or how stiff that material should be. The different fabrics and the different manners of impregnating would well result in different degrees of flexibility.

Q. The patent refers to suitably impregnated material. Does it name any? A. No, it does not name any.

Q. Are these two things, i.e., the fabric and the impregnated material—are they essential to the apparatus (208) of the patent in suit? A. Yes, they are the only thing there is that differs from the Hodge device, if there is any difference, as the inventor himself states in column 1 of his patent. His invention relates only to the improvements in the mechanism for directing the blasts of air delivered to the frame, and the only change that he has made in that respect over the Hodge device was to change one of the rigid outlet nozzles on each side and attach to it a short flexible cuff having an inwardly turned lower end.

Q. Could one reading the patent in suit determine without experimentation the flexibility, the necessary flexibility, or the proper fabric to use in constructing it, or the proper impregnating material to use? A. No, not in my opinion. I think it will take trial and experimentation.

Q. That would be as to each one of those three features? A. Yes. Certainly to secure a combination which would be satisfactory would require more information or more knowledge than is available or is given in the patent itself.

Q. Did you describe how this apparatus of the patent in suit was actuated? A. No, I think perhaps I did not describe that. This is the same as several prior patents, going at least back to a Walker patent; and the Holtzclaw

patent uses a single motor, (209) which is shown colored a blue-green on the enlarged photographic chart. That motor has a vertical shaft. At its upper end is mounted a fan which is numbered 11, which I have colored in a yellow-green. The motor rides on a carriage, which has wheels 9. That carriage is also colored the same yellow-green as the fan. So the single vertical shaft motor is used to drive the fan, to deliver air to the outlet conduits, and to propel the machine along the trackway.

At the top side of the fan casing there is an inlet opening 13, which I have colored yellow. The air comes down in through that opening 13 and is drawn by the fan, which is located in casing 12—the casing 12 is colored brown. Then fan 11 develops sufficient pressure and causes the air to flow out through these two outlet conduits 14 which have at the lower end of each one a pair of outlet sections, one section 18, which is rigid, and the other a section or cuff 19, which is said to be highly flexible.

Q. Have you considered and discussed Hodge patent No. 2,184,880, which, I believe, has been marked Defendant's Exhibit A?

* * * * *

(210) Q. Have you described that patent as to the structure, mode of operation and results; and in doing so, perhaps you can compare it with the apparatus of the patent in suit which you have just described. A. This is Hodge Patent 2,184,880, and figure 2 of it has been reproduced on a large scale by a photographic process on the upper right-hand corner of the chart which I have been referring to in connection with the Holtzclaw patent.

Q. Let's mark that chart now.

The Court: Is that the same as Hodge 15?

Mr. Watts: Yes, your Honor. Let us mark that large chart as Defendant's Exhibit H.

(Defendant's Exhibit No. H is marked for identification.)

The Witness: Your Honor, I might, just to clarify slightly the last remark you made. I believe you said Exhibit (211) 15. Exhibit 15 shows a device such as Defendant's Exhibit B, which has on each side one rigid section and one flexible section, or outlet section. This Hodge patent 2,184,880 shows the machines before the flexible cuff was installed.

The Court: That is the blue part?

The Witness: No. That has two rigid nozzles colored red on each side. There are two nozzles 117 and two nozzles 118. I will refer to the other view to show that. But both of those nozzles, which are colored red here, are metal and rigid. They are not of flexible material. The photograph, Exhibit 15, shows exactly the same machine as this 2,184,880, patent to Hodge, except that on each side one of these rigid nozzles has been replaced with one flexible nozzle.

The Court: In other words, your theory is that 880, the December 26, 1939, Hodge patent is similar to the earlier model except it has extended hard cuffs. Is that right? The part which you represent by the red?

The Witness: No. I am afraid I haven't made myself quite clear yet, your Honor. Maybe this is a better way of saying what the point I am trying to make is: That is, that this machine of the Hodge patent 2,184,880, which is prior art to the patent in suit—

The Court: Yes.

The Witness: In other words, they came before the (212) patent in suit. That's an expired patent.

The Court: But followed the Hodge No. 1.

The Witness: Followed some of the earlier Hodge developments; that's right. And this patent showed the construction in its entirety, which was the identical structure shown here to make Defendant's Exhibit B; and to make Defendant's Exhibit B, one of the rigid nozzles or rigid outlet sections was removed, and the flexible cuff was applied on each side. So we have referred to that patent itself.

I think a side view may make it a little more clear. If you will look at figure 1 on the first sheet of the drawing, your Honor, up in the middle, this is a much smaller scale. There is a side view of this entire unit, and extending down on the side you will see there are two, one behind the other, two of these outlets 118. So that would be a view such as we have here.

Looking at Defendant's Exhibit B, side view, with two outlet nozzles on that side, and there are two outlet nozzles on the other side.

Now, the view of figure two, which has been reproduced on this chart H, has the end view. It's the same as the exhibit as I have turned it now. You can see the fan casing at the top, in which there is a fan like the fan 3; the motor portion was not brought into it. The two outlet (213) conduits on each side, extending down and slightly laterally, spread out slightly—not very much. And then at the bottom side there is in this view, one sees one of the rigid outlets or nozzles on the left side and another one on the right-hand side.

Those rigid sections or nozzles at the bottom end of these ducts are in the Hodge patent 880, are made adjustable so that they may be moved toward or from the center of the machine to direct the air both downwardly and transversely across the machine.

This particular Hodge patent made no attempt to claim anything regarding the air duct structure. In other words, this was not the—The invention involved here was the detail of stopping the blasts of air at certain points along the machine; in other words, he showed a cleaner, but the invention claimed in this Hodge patent related to the means of starting and stopping the fan, to stop the blasts of air when it passed over certain parts of the spinning frame or over the aisles. That, of course, is not a matter of any importance and means nothing here in this suit.

So I refer now to the left-hand side of the chart of Exhibit H, and your Honor can see how closely similar and how exactly the same effect the device shown by

Holtzclaw is to the device shown on the Hodge patent 880 in all respects, except for the addition of the short flexible cuff (214) on each side.

The Court: And that is this?

The Witness: And that is Exhibit 15.

Q. Did you find in the 2,184,880 patent any reference to the use of flexible material in the housing part? A. Yes, it does refer to the use of flexible material. On page 3. The page before that, your Honor. There is a 3 up in the right-hand corner. The first column of that page starting at line 31. First, I will say in line 32 there is a word "provided," which, in the specification as originally filed and has been certified to by the Patent Office was and should have been "pivoted" instead of the word "provided." So, with that in mind, the sentence here reads: "Although these spouts are not pivoted they are made of material sufficiently flexible to allow bending without damaging the material. The bending or pivoting takes place at points 98a and 99a."

In that case, this is an example of the possibility of using material which will bend. The flexible material is not in the nozzle of the outlet ends of the nozzles, but goes up here where the blue portion joins the brown casing, which your Honor can see the numerals 98a and 99a; and at that place the material was made sufficiently flexible to allow bending so that these blue leg portions could be moved in or out and adjusted. I think that merely might be referred (215) to to indicate how common it is to provide flexible material if one wants to have material which will bend.

* * * * *

(216) Q. Tell the Court what is shown on the other part of the chart. A. In the center of the chart, Defendant's Exhibit H, Claim 6 of the Holtzclaw patent in suit has been reproduced. This is an enlargement of a typewritten copy of the claim, and the claim has been divided into paragraphs or elements in an attempt to more clearly show the features involved, the elements involved in the

structure which is defined by the claim—to show that more clearly than one might more easily observe it on examination of the printed copy of the patent.

In addition to the reproduction of the Claim 6 in suit, I have added colors under the various elements which are included in the claim, colored lines. Those colored lines use the same colors as were applied to the corresponding (217) parts of the patent drawing figures 1 and 2 of the Holtzclaw patent in suit, which figures are reproduced at the left-hand side of the chart.

I will not speak, for the time being, about the pictures of the reproduction at the lower end of the chart. We will come to that later.

Claim 6, which I will read through now and explain in connection with the parts of the patent structure, reads as follows: (Reading) "The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally aligned machines having * * *." That's more or less a preamble of the art to which this cleaner is applied. (Continuing to read): "* * * having a trackway * * *." The trackway is colored in orange, and the trackway on the patent is shown by the reference numeral 10.

(Reading): "* * * above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan * * *." The motor is part number 8 and is colored in a blue-green. The carriage and fan are colored in a light green.

(Reading): "* * * with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, * * *." In other words, the disclosure consists of a single motor which drives both the fan and propels the carriage, and the claim so specifies that there is a (218) motor and means operable by said motor for propelling the carriage and for rotating said fan.

The next element of the claim is (reading): "A fan casing enclosing the fan having an inlet and oppositely positioned outlet conduits, * * *." The fan casing is colored in brown. It is marked 12 on the drawings of the patent

in suit. The inlet is yellow. It's marked 13 on the drawings of the patent in suit. The oppositely positioned outlet conduits are blue, and they are numbered 14 and 15 on the drawings.

Then we come to more or less of a major division in the claim where one might say that the part of the claim up to this point describes and defines the machine itself and the following part relates to the outlet nozzles or terminal portions of the outlet conduits where the claim says, (reading): "* * * of the construction in which * * *." First, the "said conduits present a rigid section terminating above the heads of the machine operators when standing, * * *." On each side of the cleaner, attached to each of the outlet conduits 14 and 15, the blue conduits, there is a rigid section 18. The figures 1 and 2 of the patent in suit show that rigid section in front on the left-hand side, and behind the flexible nozzle on the right-hand side.

This terminology, "a rigid section terminating above the heads of the machine operators when standing," finds its (219) precedent in the language of the patent specifications. I will refer to column 3 of the patent in suit, starting at line 37, which reads (reading) (Plaintiff's Ex. 12):

> "Preferably the nozzles 18 of the machine are of rigid material and terminate at such height—"

The Court: Where is that, now?

The Witness: It's on the second page. The column is headed by the numeral 3.

The Court: Yes, I see it.

The Witness: (Continuing to read): "* * * 18 of the machine are of rigid material and terminate at such height as not to engage an obstruction such as an operator passing through the aisle between groups of machines."

So, in the specifications, the portion that is described as being a rigid part which terminates above the head of the machine operator is the nozzle 18, and I have shown that in red on the claim chart and on the drawings of the patent.

The next element of the claim reads: "* * * and in which the said conduits at each side are provided with a

cuff of highly flexible material extending therefrom toward the machines * * *."

Now, the patent calls the relatively short inwardly curved flexible member 19, in some places the nozzle and in other places a cuff. I have colored the flexible cuffs made (220) of highly flexible material in purple. And the purple line extends both from the word "cuff of highly flexible material" to the highly flexible parts, nozzles 19 of the drawing of the patent on the left-hand side. I will refer later to the lines extending to the Hodge patent on the right-hand side.

Q. May I interrupt just a moment? Have you taken a definition of the word "cuff" from the dictionary? A. Yes, I have.

Mr. Watts: I ask the Clerk to mark that definition as Defendant's Exhibit J.

(Defendant's Exhibit J is marked.)

* * * * *

(221) The Witness: I think in this definition the No. 5 definition will probably adhere, because it is (reading): "Mech." This is an abbreviation for mechanism or mechanical, and it reads: "Something resembling, or likened to a cuff for the wrist."

Now this description or definition of the "cuff" in the claim says that it is both of highly flexible material, as the specifications of the patent stated, and it says that it extends therefrom toward the machines. That means it extends from the outlet conduits toward the machines. And the teaching of this Holtzclaw patent in that respect was that he wished to provide and did provide an inwardly curved end on the highly flexible cuff so that by means of that inwardly curved end of the cuff the air would be directed (222) as shown by the arrows in figure 1, for example, be directed toward the cuff extended toward the machine, inwardly toward the machine, and the air is directed toward the center of the spinning frames, towards the top portion primarily of the upper row of spools of roving.

Then, this descriptive portion of the claim, or more or less functional statement is added which reads, (reading): "* * * to enable currents of air produced by the fan and discharged through the cuffs to be directed against the machines * * *" There again the teaching of the patent is that this air is directed across, against and across the spools of roving between the upper and middle creel boards marked 3 and 4. (Continuing to read): "* * * and the cuffs to yield upon impingement with an operator or other obstruction in their path of travel."

I think I might again refer at this time to this actual structure, Defendant's Exhibit B, and call your Honor's attention to the fact that it is, so far as the parts which are here are concerned, this is an exact replica, a substantially exact replica, of the structure shown in the drawings of the patent in suit; and we have supported this Exhibit B on top of the tri-rail or track, which is part of Defendant's Exhibit F, in a position so that the outlet of the flexible cuffs is located at the same height as was taught by the Holtzclaw patent, the same height with respect (223) to the upper creel board and the spools of roving.

Your Honor will see that this is initially the outlet, the inwardly curved outlet ends of these flexible cuffs, is directed at the top portion of the upper spools of roving and under the lower surface of the upper creel board.

Q. Is there any teaching in the patent as to any other position for these highly flexible cuffs? A. No, there is no specific teaching of any other position for the location.

Q. Now, refer to the drawing of Hodge patent No. 2,184,880, and state whether or not that apparatus responds fully to all the requirements of Claim 6? A. This apparatus of the Hodge patent 2,184,880 responds fully to the requirements of Claim 6, except for the limitation that the cuff is made of highly flexible material. I might point out here that if a few words were removed from Claim 6, these words "of highly flexible material," which are underlined in purple on the chart, Exhibit H, and the words, "The cuffs to yield upon impingement with an operator or other obstruction in their path of travel." If those words

were removed, these five words stating that the cuff is of highly flexible material and the last two lines of the claim as reproduced on the chart, Exhibit H, "the cuffs to yield upon impingement with an operator or (224) other obstruction in their path of travel." If those words are stricken out from the claim, the claim reads exactly on this Hodge patent 2,184,880, and it reads exactly on some of the other Hodge patents and other prior art patents earlier than Hodge.

Q. Is this Hodge patent 2,184,880 acknowledged in the Holtzclaw patent? A. Yes, it is. And other Hodge patents. I might at this time point out that there are two red lead lines on the right-hand side of the chart H leading to the rigid section of the nozzle which is shown in the Hodge patent 2,184,880; and I have also extended a red lead line from the word "cuff" to the rigid cuff 118 of this Hodge patent 880.

It might be pertinent here to call attention to the fact that in the Hodge patent 2,047,558 on the chart here and sheet 1 of that patent is enlarged and reproduced, is an enlargement on this chart which I now have; and I merely want at this time to call attention to the fact that the specifications of this Hodge patent 2,047,558, call the adjustable nozzles which he provides "sleeves or cuffs." The use of this word "cuff" as describing a short rigid non-flexible outlet or nozzle, was old and used previously in this Hodge patent. That word appears in the Hodge patent 558 at page 1, column 1, line 49.

Q. Is it true that the cuff itself is shown in the (225) figure 5? A. In this earlier Hodge patent, as in the 880 Hodge patent, there are two sleeves or cuffs on each side of the machine which are described as being two sections which are attached to the, in this case, relatively short outlet ducts 14 and 15 which lead from the fan housing 11.

Q. Without going into detail in Hodge Patent 2,047,558, will you state whether or not the claim in suit reads squarely on that showing, except for the limitations of the flexible cuff? A. It does read squarely on the showing of the Hodge patent, with that exception.

Q. So that as regards Claim 6, it reads alike on each of these two Hodge patents? A. Yes.

Q. And fails to read only in respect to the flexible cuff? A. That's right.

Mr. Watts: I ask that the exhibit just described by the witness be marked as Defendant's Exhibit K. That is a showing of certain figures of Hodge patent 2,047,558.

The Court: That is K?

Mr. Watts: Yes, your Honor.

(Defendant's Exhibit K is marked.)

Q. (By Mr. Watts) Both of these Hodge patents that you have just discussed were acknowledged in the patent in suit, (226) were they? A. Yes.

Q. Now, does the fact that a certain part of that claim in suit does not find a response in either of those Hodge patents mark the only difference between those prior patents and the one in suit? A. Yes.

Q. So that any alleged infringement in the patent in suit must be found to reside solely in that flexible cuff limitation? A. Yes.

* * * * *

(227) Q. Now, would you take up the figures at the bottom of Exhibit H. A. Here at the bottom of Exhibit H there has been reproduced parts of the drawings of three prior art patents: the Robinson patent No. 1,326,140; the Trautvetter patent No. 2,309,362; and the Lintern patent No. 2,137,917.

These are all reproduced here to show typical uses of flexible outlets or nozzles which would yield upon impingement with an object or obstruction in their path of travel.

Mr. Watts: We have a large chart showing more than one view of each of those three patents. I will ask the Clerk to mark that as Defendant's Exhibit L.

(Defendant's Exhibit L is marked.)

Q. (By Mr. Watts) Would you discuss each of those three patents in connection with Exhibit L? Before you

start, I might hand up to the Court a volume of prior art (228) patents which I will ask the Clerk to mark as Defendant's Exhibit M.

(Defendant's Exhibit M is marked.)

* * * * *

The Witness: These three patents are merely three of a number of possible evidences of the common use of flexible portions when one wished to either direct a blast of air or direct a flow of material at a certain point and at the same time avoid injury to a person, or to yield easily when an obstacle is presented, or when there is an obstruction in the path of travel.

This first, the Robinson patent, for example, relates to the use of flexible nozzles at the end of the tubes or ducts which supply sand beneath the wheels of a locomotive. These nozzles are directed inwardly at the point where the sand is to be applied, and they each have a flexible end marked 8 on the drawings. And the patent itself states in (229) several places that the nozzles are flexible to move if there is an obstruction in their path. First, in column 1 of the patent, starting at line 28, paragraph, which reads, (reading): "Further objects of the invention are to provide a sanding device which is simple in its construction and arrangement, strong, durable, efficient in its use, having means to maintain it and to restore it in and to normal position in case the discharge nozzle is shifted by an obstruction at or near the track, readily set up in operative position, and comparatively inexpensive."

In the second column of page 1, at line 75, the patent states (reading): "The pipe 3, as well as the pipe 4 has attached to the lower end thereof a flexible discharge nozzle 8, and as the construction of each nozzle is the same, but one will be described, the description of one applying to the other. The nozzle 8 is formed from a flexible body, preferably rubber, and is secured to the lower end of the delivery pipe by a clamp 8a. The lower edge of the nozzle 8 is flat throughout and directly opposes and is positioned in very close proximity to the tread of the track rail 6, as

well as in very close proximity to that wheel of the locomotive with which the nozzle cooperates. The nozzle 8 is disposed at an inclination and extends toward that wheel with which it cooperates, * * *"

Starting in the succeeding paragraph the statement is (230) made as follows: (reading): "The flexibility of the nozzle prevents the breakage or permanent bending thereof when meeting with an obstruction and the spring 9 * * *." That is the coil spring on the inside of the nozzle, the rubber nozzle— (Continuing to read): "* * * and the spring 9, not only maintains the nozzle 8 in normal position, so as to deliver the sand at a point in close proximity where the wheel engages with the track rail, but also restores the nozzle to normal position in case the nozzle is shifted to one side when meeting with an obstruction."

Then, referring to the Lintern patent 2,137,917: This is also a sanding device, and in this case a sanding device for an automobile, as shown here in figure 1. And the sand is conveyed through a relatively rigid portion or duct 10 to a flexible outlet nozzle 11.

The Court: I do not imagine they sold many of those, did they?

The Witness: I doubt it, although I have heard that they are being used on trucks now. It is coming back into use again. Maybe this man was ahead of his time. I think some trucks are now equipped with them for icy roads and snow.

Mr. Watts: I think your Honor will find—

The Witness: This patent to Lintern also states that the object is to provide "a flexible discharge header and (231) distribution conduit combination so arranged that striking of the conduit or any part of the combination by obstructions during movement of the vehicle cannot damage the header and conduit or the remainder of the sanding apparatus."

Now, the Trautvetter patent is also a device that's an outlet from a toilet of a railroad car, and it's arranged with a flexible end so that the discharge will be directed in the position desired and so that when the truck of the car

turns, as shown in figure 2, impingement of the truck with the end of the nozzle will not damage the nozzle or will not damage the truck. And it states that this nozzle is "flexible and resilient" so that it can readily be deformed if hit by a portion of the truck in its movement.

And the material is described on page 2 at line 15 of column 1 as being (reading): "The flexible and resilient portion 27 is preferably made of rubber reinforced by fabric so that it normally retains its tubular shape, but is readily pushed aside or deformed as shown at 30 (Fig. 2), if the truck 20 swings sufficiently to strike its wall. After such deformation it returns to normal as shown in Fig. 3."

The Court: That is offered, I assume, for the purpose of showing that there were cuffs and things of that kind prior to this?

Mr. Watts: Yes, sir, in many different industries.

The Court: Well, we have that.

(232) Mr. Watts: And as your Honor will recall, one of the witnesses testified yesterday about piping air in a spinning room through a metal pipe and then having a long hose to carry it around to the machines.

The Court: That was the Holtzclaw?

Mr. Watts: No, sir. That was the hand cleaner method.

Now, I offer in evidence a certified copy of the application file in the Patent Office from which the patent in suit issued.

The Court: Holtzclaw patent?

Mr. Watts: Yes, sir. I offer it in evidence as Defendant's Exhibit N.

The Court: All right, sir.

(Defendant's Exhibit N is filed.)

Mr. Watts: And because the Norwegian patent was cited in that case, I have obtained from the Patent Office a certified translation of the description and have also attached photostats of the drawing. I offer that certification and prints of the patent in evidence as Defendant's Exhibit O.

(Defendant's Exhibit O is filed.)

Q. (By Mr. Watts) Now, would you comment very briefly, Mr. Sessions, on the Norwegian patent—just very briefly.

* * * * *

(233) The Court: It is just a matter of drawing up dust or dirt from the road. The whole thing is exemplified in the nozzles that appear on the spouts of the drill. It is one element in processing that has been used for a long time.

Mr. Watts: I guess that answers the question.

The Witness: Yes. This used a yielding nozzle g, through which air was directed at the place to be cleaned. This Norwegian also had a suction to pick up the dirt that is blown up by the nozzle. He had a combination of an air blast to loosen the dirt and a suction device to—

The Court: That particular factor, are those all things that have been used for a long time?

(234) The Witness: Yes, your Honor.

The Court: In any number of things: drills and all sorts of spouts.

The Witness: Innumerable uses of flexible outlets.

The Court: Just as every-day as a woman's voice.

Q. (By Mr. Watts) Now, having in mind the prior art as evidenced by these Hodge patents and by these other patents showing flexible nozzles, and also having in mind the fact that the claim in suit differs from all those things solely by the last limitation of the flexible cuff, highly flexible cuff, state whether or not in your opinion anything of an inventive character or anything more than obviousness or mechanical skill was required to produce the device of the patent in suit?

Mr. Grier: I object on the ground it's leading, and on the ground it's the ultimate question for the Court to decide.

The Court: He is expressing the opinion of an expert, which he is entitled to do. Overruled.

A. In my opinion, it definitely involves no patentable invention. It is something that would be obvious to anyone having ordinary skill in the art.

Q. Having those same factors in mind, state whether or not the Holtzclaw improvement pushed back the frontiers of chemistry or physics and the like? (235) A. No, it did not.

Q. And do you think, is it your opinion that it would make any distinctive contributions to scientific knowledge? A. No.

Q. Now, much has been said about the development of this spinning frame cleaning art. Have you prepared charts which trace that development? A. Yes.

* * * * *

Q. (By Mr. Watts) Will you discuss the development of this industry, or this art, by reference to those three charts P, Q, and R, and you may pass over it relatively (236) quickly. A. These charts are arranged chronologically. The left-hand inside of Exhibit P are reproductions from two Smith patents, No. 1,857,410 and No. 1,920,768. These yesterday were shown on photographs, and at that time they were identified as being the Walker device. The Walker patent itself preceded these two patents and had a different type of nozzle. It would have been more correct in discussing the photograph yesterday to call the device the device of the Smith patent. In any event, your Honor will see here in the first Smith patent a device for cleaning spinning frames where there is a motor-driven blower in the center and two outlet conduits extending transversely at each side, with downwardly and inwardly curved outlets. These are rigid outlets marked 86 in the patent. Figure 14 in the lower right-hand corner of this sheet of the Smith patent shows a cross section of the entire spinning frame with the cleaner mounted above the frame. This cleaner was arranged to travel on a track just like the modern-day cleaners do. The direction of air flow is shown by arrows in that figure 14.

There is, also your Honor will see in the upper middle of the bottom portion of the lower casing 20, which directs

air directly downward on the top surfaces of the top creel board. The two inwardly curved nozzles at the side direct (237) air directly toward the machine and across the machine as shown by arrows in figure 14.

The next Smith patent 1,920,768, is the same thing except that dampers or vanes have been added to the nozzles. These are indicated by the reference number 120, and those dampers are arranged to change the direction of air slightly so that some of it may be directed more across the machine and other parts of it directed more nearly downwardly.

In each of these Smith patents there is only one outlet on each side of the cleaner unit. There is one outlet 86 on each side. One outlet duct 86, having an outlet 88. In this respect these two Smith patents are like plaintiff's tri-rail cleaner which Mr. Kulp explained yesterday, which uses the single outlet nozzle on each side of the blower. And that single nozzle is directed downwardly and inwardly.

Smith was doing the same thing by providing a slight twist to the outside ends of his nozzle, as shown by figure 12 of 1,857,410 patent, and he was attempting to do the same thing by adding the vanes or dampers in his later patent.

Then we come to one of the Hodge patents. There were several Hodge patents. This is 2,047,558. Here again there is a single motor mounted vertically so it has a vertical axis which drives both a fan and propels the carriage along the track. There are two outlet ducts, relatively short in this case. They are marked 14 and 15 on each side of the (238) fan casing 11. Each of these outlet ducts has two cuffs; in other words, each is provided with two sections at this outlet end in the form of metal cuffs. These are short metallic portions so that there are four nozzles, you might say. Two on each side. Just as there is in the Holtzclaw patent in suit and in Exhibit B structure.

These nozzles are adjustable so that the air discharging from them may be directed toward the center of the machine or straight down. It was intended by Hodge that

one nozzle should be turned in toward the center of the machine on each side and one of the nozzles on each side should be turned downwardly.

Then the next Hodge patent, 2,184,880, is basically the same as the previous Hodge patent, except that the outlet conduits 98 and 99 shown on figure two here, are longer than the outlet conduits 14 and 15 of the Hodge patent 558. At the lower end of those outlet conduits 98 and 99 of this Hodge patent 880, there are also two nozzles on each side made of rigid material. These nozzles are shown as being longer than the nozzles here on the earlier Hodge patent. In other words, in this 880 patent the nozzles were brought down closer to the spinning frame than had been the case in the earlier Hodge patent. These nozzles also are adjustable so that one on each side might be turned inwardly to direct the air inwardly across the machine and the other nozzle on (239) each side to direct air downwardly.

In neither of these Hodge patents do the nozzles have an inwardly curved end.

Then we come to this Holtzclaw patent in suit No. 2,524,797, shown also on this Chart Q, where one of the rigid cuffs of the earlier Hodge patents on each side has been replaced with a short flexible cuff 19. Those short highly flexible cuffs have inwardly curved lower ends and the arrangement is such that the cuffs are located at about the level of the upper creel board, so that the air will be directed across the under-surface of the top creel board as well as across the upper spools of roving.

In this final figure on Chart R, Defendant's Exhibit R, there is reproduced again figure 1 of the Holtzclaw patent in suit; and on that has been drawn and shown in red outline the outlet ducts and nozzles of defendant's tri-rail cleaner in substantially the same proportion as is used in the patent drawing to Holtzclaw. And your Honor will see how by this construction of the tri-rail cleaner, which is illustrated in several photographs in Defendant's Exhibit D—

The Court: Yes, sir.

The Witness: (Continuing) —A single rigid nozzle on each side of the machine is spaced outwardly from the center further than had been done before. And by that means and (240) by means of the special shape of the nozzle, the twisting shape and the change in width of the nozzle, the air issues from the nozzle on each side so that it sweeps across the entire width, one might say, or the entire upper portion of the spinning frame, the spinning machines.

The direction of air from the narrow end of the nozzle, which is curved inwardly toward the center shown at the left-hand side of this colored portion of Chart R, shown in red arrows, showing how it strikes the underside of the upper creel board as well as the top spools of roving, and then the air changes its direction in a continuous stream of air, continuous band of air, until at the far end of the outlet nozzle the air is flowing generally in the direction of the arrows shown at the right-hand side of Exhibit R. The red portion of the nozzle and the red arrows there show the path of air that comes from the wide end of this nozzle.

Q. Would it be true and accurate to show on the left side of Exhibit R arrows such as are shown on the right? I mean, show them in addition to the red arrows that are shown? A. Yes, of course. I omitted those to avoid confusion. Of course, on each side of the machine there is a band, one might say, of air, of curved shape. One end of the nozzle is following the path of the arrows shown here on the left-hand side, and the other end of the same nozzle on the left-hand side of the machine here, air is flowing down as shown (241) at the right-hand side.

Q. And, by reason of that shape of the air stream, you clean the machine from the top creel board down through the creel and all along the side of the machine close to the floor, do you not? A. Yes, that is done on each side by this single nozzle on each side. These rigid nozzles are located at substantially the same height as were the rigid nozzles 18 of the Holtzclaw patent.

Q. Now, we have reviewed the genesis of these pres-

ent-day models, and we have seen the limitations in the claim of the patent in suit. I would like to know if you have considered the file history of the patent in suit? A. Yes, I have.

Q. And did you find that the limitations in the claim in suit were emphasized by the specifications?

Mr. Grier: Objection.

The Court: Overruled.

A. Yes, I did.

Q. And did you find that any of the limitations in the claim in suit were put in by the solicitor after the citation of prior patents? A. The entire claim in suit was put in after the citation of prior patents.

Q. I didn't state the question properly. In considering (242) the file history of the patent in suit—and I am now thinking of the original claims as well as the specifications—did you find that the claims were amended by including additional limitations, and that they were so amended after the examiner had cited prior art? A. Yes, that is true.

Q. Will you point out or state some of those limitations? A. Your Honor, if I might refer to that file? No, I think I have an abstract of it that I can use.

Q. Well, we could use the Court's copy. Here it is. A. Well—

Mr. Grier: Your Honor understood my objection was to the fact that the file, being a written instrument and in evidence, speaks for itself?

The Court: Yes, it is in evidence. He was just discussing that.

A. In this connection, I merely would point out that the claim—

Q. I might simplify the matter by mentioning the claims 3 to 5. A. Yes, sir.

Mr. Grier: I object on the ground that 3 to 5 are not subject to this litigation.

Mr. Watts: That's all right, your Honor, but they show what the patentee recognizes was a necessary thing in (243) order to get his claims allowed. A. In claim 3,

for example, the claim as originally filed was amended to state that the flexible nozzle, the highly flexible nozzle, was—No. The nozzle made of impervious fabric was curved, had an inwardly curved, end portion, and the word "curved" relating to the end portion is also added by amendment to Claim 4.

As these claims were allowed, claims 1, 2 and 6, all were limited to the use of flexible cuffs; and claims 3, 4 and 5 were limited to the use of yieldable nozzles. Claims 1, 3, 4 and 5 as allowed were all limited to having inwardly curved flexible cuffs or nozzles; and claim 2 was limited to having a cuff which extended downwardly and inwardly. In other words, the claims were directed to the use of inwardly directed cuffs and a distinction was made between the terminology of claims 1, 2 and 6 and the terminology of claims 3, 4 and 5 as far as the flexibility is concerned. Claims 3, 4 and 5 merely state that the structure has "yieldable" nozzles, whereas claims 1, 2 and 6, the claim in suit, were limited to the use of "highly flexible cuffs."

Q. What did you find with respect to claim 6, which, when it was presented to the examiner was No. 8? A. Claim 6 was presented to the examiner after an interview with the examiner and after the previous claims had all (244) been amended and allowed. Claim 6 of the patent was presented in the application as claim 8, and the statement was made at this time: We would like now to present in lieu of the rejected claims a new claim 8 which we believe complies with the requirement of the form which has been made by the examiner and better form for consideration on appeal if the examiner does not find it allowable as presented. This claim is along the lines of those allowed but somewhat simplifies the main feature of the invention, which is, of course, the feature of the position, construction and operation of the flexible cuff.

Q. Did you read from the latter part of the comments and remarks? A. Yes. There is an additional remark or comment here that follows the portion I have read which states: "The importance of this feature has been

emphasized throughout as noted in lines 8 to 14 of page 4, and 1 to 5 of page 8 of the specifications, which enables the apparatus effectively to direct the current of air across the machines at a relatively low position and at the same time by a flexible feature which prevents injury to the operators of the machines."

Q. In view of those comments, state whether or not it is your opinion that the highly flexible material limitation, the inwardly curved end, and the direction or extension of the (245) cuffs toward the machine, and the discharge of air across the machine were important considerations in the allowance of that claim that is here in suit? A. Yes, they were. And I might add that in addition there I think consideration was the location of the air stream where it was directed across the underside of the upper creel board was of importance in this respect. Emphasized there.

Q. In your opinion is the action and operation and results of the portion of the apparatus down to but not including the flexible cuffs, is the operation and results of that part of the apparatus affected by the presence of the flexible cuffs? A. Did you say "affected"? I didn't quite understand.

Q. Yes. Affected by the presence. Do the flexible cuffs have any effect on the operation and results of the remainder of the apparatus of the claim? A. No, no, they do not. Not at all.

Q. Do other parts of the apparatus, that is aside from these flexible cuffs, do they perform the same functions whether the flexible cuffs are present or not? A. Definitely the same functions whether or not the flexible cuffs are present.

Q. Does the apparatus of the first part of the claim affect the operation of the flexible cuffs? (246) A. No, it does not.

Q. Would the flexible cuffs perform the same function and operation if attached to some other type of rigid conduit? A. Yes.

* * * * *

(247) Q. What is the function of the cuffs, in other words? A. It is to direct air toward the part to be cleaned. Wherever one wants to clean, one may direct air. That's the purpose of the cuff.

Q. Now, does that cuff perform any different function when it is combined with this cleaner than it does when it isn't combined with it? A. No, the cuff itself is merely directing air. There is no difference whatever in the function.

Q. Now, let's turn to the question of infringement, Will you discuss, please, the accused apparatus from that standpoint? Do you find in the accused apparatus of Exhibit F, for example, the various elements of Claim 6 of the patent in suit? A. No, I do not find all those elements.

Q. Which ones are absent? A. The accused apparatus—Is this the one?

Q. Yes, this is it. A. That is what you referred to?

Q. That's right. A. As exemplified by Exhibit F, has a motor-driven blower but does not have means for propelling the carriage (248) along the track, driven by the same motor as the claim here specifies. That accused apparatus is a trailer-type of device, and the motor of it is used solely to produce the required air for cleaning purposes.

The device has only one outlet section on each side. In other words, it does not have the two sections on each side as the Holtzclaw patent showed and defined in the Claim 6.

Claim 6 first calls for the rigid section terminating above head height of the machine operator, and then it calls for cuffs of highly flexible material, and the claim and the description describes the use of one of those elements on each side.

Q. You mean the rigid sections on each side? A. One rigid section and one highly flexible section on each side. The defendant's structure has a long duct or tube extending downwardly, single duct on each side of the machine, and that duct is not highly flexible in the way the cuffs were made for the Holtzclaw machine of the type shown

in the patent in suit. These ducts, as I explained yesterday, have rigid fiber pieces on each side of them, arranged so that they will not yield transversely of the machine. That, of course, is important when such a long tube is used because the air leaving the duct jerks, or thrusts an outward thrust, and if the duct did not have **(249)** that rigidity, it would bend out, so that your Honor can see these ducts are so rigid in a direction transverse the machine so that if you pull on them the entire unit bends before the duct itself will bend. The duct itself will not bend in that direction. It will move neither toward the machine nor away from the machine in the normal operation of the device.

I might continue here. In the device of the patent in suit, the word "cuff" itself indicates a short element and the description of the patent and its drawings show a short part which directs air at the top portion of the roving, or the roving spools, below the upper creel board. And in the accused structure, these long ducts on each side are used solely to clean the lower portion and the underframe portion of the spinning machines. The upper portion, the spools of roving, your creel section of the machine, is cleaned by an entirely different unit, the so-called tri-rail unit of the defendant. We have no physical example of that tri-rail cleaner in court, but we have it in the catalogue.

The tri-rail cleaner has attached to it a motor-driven carriage and a separate motor which is used to drive its carriage along the track; and that tri-rail cleaner pulls the accused structure along the track.

Q. Does the accused apparatus, for example, given as Exhibit F, show a cuff extending toward the machines in the **(250)** sense of the patent? A. The accused does not, in my opinion, have such a cuff. It does not have a cuff, because the cuff is the word that was used and as I understand its meaning it relates to a short section, and these ducts of the accused apparatus have no inwardly curved portion. They do extend downwardly, but they do not extend inwardly, transversely toward the machine.

Q. Are they parallel to the sides of the machine? A. Yes, they are substantially parallel to the sides of the machine.

Q. And if they would extend toward the machine, they would intersect it sooner or later, would they not? A. I think that was the meaning of the use of the word in the patent in suit, because these ducts do extend toward the mechanism of the machine; whereas, these ducts of the accused structure will never, no matter how far they are extended, intercept or contact the machine itself.

Mr. Grier: Excuse me. I didn't understand that question fully. In describing the Parks-Cramer device, did you refer to our cuffs as ducts? Would you let me hear what he said?

The Witness: I called—These I intended to call cuffs. I am not sure what I said.

Mr. Grier: I thought you called them ducts.

(251) A. Either nozzles or cuffs, I think, is the proper term.

Q. It was necessary, was it not, to turn the cuffs of the patent device inwardly in order for the air which came out of the end to strike the machine and blow across it? A. Yes.

Q. Does the accused apparatus have an open end, an open lower end, as the patent apparatus does? A. No, not in the same way. It has an opening at the lower portion which is directed downwardly, but it isn't the entire end. It has no inwardly curved end, which has no—

Q. I believe you mentioned it before, but I would like to ask one question: Contrast the parts of the spinning frame which are cleaned by the accused apparatus on the one hand and by the patented apparatus on the other hand. In other words, does the accused apparatus clean the same part of the machine as is cleaned by the patented apparatus? A. No. I think I explained that. The accused apparatus does not clean the same parts of the machine as cleaned by the patented apparatus. It does not clean the spools of roving and so-called creel section of the machine,

and the patented apparatus is directed at cleaning that portion of the machine.

* * * * *

(253) Mr. Watts: I ask the Clerk to mark this drawing as Defendant's Exhibit S.

(Defendant's Exhibit S is marked.)

Q. State what figure 6 of Exhibit S shows. A. Figure 6 is an enlargement of the same figure of the Smith patent 1,920,768, and it shows—it is a side view of the Smith construction, which is shown here in the middle of Exhibit P.

The Court: This is what you might call a side view of the front view shown on this—

The Witness: Of Exhibit P; that's right, your Honor. And it shows that this device has, in addition to the unit which I discussed, the portion which I discussed on Exhibit P, it has a trailer unit which has a carriage section marked 124 and from which it is hung by means of an arm 122, a blower unit and two nozzles 134. Those nozzles 134 are shown in the background on figure 7, which is also shown on Exhibit P. But this shows the use of a trailer with a separately driven blower. Actually, in this case there are two blowers driven by a single motor.

Q. The motor that drives the trailer fans is independent (254) of the motor that drives the carriage along the track, is it not? A. Yes, it is.

Q. And will you compare that? A. This, you might say, is like the accused device in that respect. The accused device is a trailer unit in which the motor is used to develop the cleaning air only and not to propel the device along the track.

Q. What is the function of the accused trailer unit? A. The accused trailer unit functions to clean the underframe and the lower portion of the machine only. The unit which pulls along the trailer unit, the tri-rail cleaner, along, is all that is needed to clean the portion of the frame of the machines above the greenboard, the creel portion of

the machine; if one did not wish to clean the under frame portion, the trailer unit could be omitted entirely.

Q. Some reference was made yesterday in the plaintiff's case to Exhibit 14, which shows a device referred to as the "elephant trunk" cleaner. Will you compare the apparatus of Exhibit 14 with that of the Holtzclaw patent in suit?

Mr. Grier: What do you mean? The illustration in the Holtzclaw patent or the patent?

Mr. Watts: The apparatus illustrated in the Holtzclaw patent.

(255) Q. (By Mr. Watts) And point out any structural differences you may find. A. The apparatus shown on the photograph Exhibit 14 uses a plurality of ducts and nozzles, outlet discharge points, directed to various parts of the machine. There are two nozzles which I will mark with the numeral 1 at the center directed downwardly. The air is discharged from an open end. There are two nozzles, one on each side and one on the left-hand side. I will mark them with the numeral 2. These nozzles 2 are made of flexible material and are located in substantially the same position as the nozzles 19 of the Holtzclaw patent in suit, relative to the spinning frame itself and to the spools of roving and the upper creel board. There are on each side also an intermediate nozzle which I will mark 3. This nozzle 3 has an inwardly curved end and it is positioned approximately at the level of the middle creel board. It has a flexible end portion, but the upper portion of this nozzle has been reinforced by a reinforcing member which I shall mark 4. That reinforcing member resists movement toward and away from the center of the machine.

There is another downwardly extending duct, or tubular portion, which I shall mark with a reference numeral 5, which extends down below the lower creel board and which has, I believe, three outlet openings in it directed toward the (256) machines. These outlet openings discharge air to clean the lower portion of the machine and the underframe. The machine of Exhibit 14—

Q. Just a moment. I see you are going to the other patent. I would like to clear up one or two things first. The long tubes 5 on Exhibit 14, are they open at the bottom, as the others are? A. No, as I remember they are not open at the bottom.

Q. Do they have holes in the sides of them? A. Yes, that's right.

Q. Have you examined the structure as to any of those tubes 5? A. Yes, I have.

Q. And how are they constructed, the ones you saw? A. This tube which I saw which corresponds with the one which I marked 5 on Exhibit 14 is of thick, quite stiff material. It will bend, but it is not in any sense of the word highly flexible. It has a seam in the side away from the machine and inside of this vertical tube or duct there is a reinforcing member in the form of a high-pressure hose, which does not carry the air but which provides a stiffening effect to resist movement toward or away from the machine, and it reduces the over-all flexibility of the tube 5.

Q. Does that tube 5 extend toward the machine in the sense (257) of the claim in suit? A. No, it does not.

Q. Is it generally parallel to the side of the machine as in defendant's accused apparatus? A. Yes, it is. I might add here that in one of these Parks-Cramer units which I have observed, the rigid portion to which the tube 5 was attached terminated at a point about five feet eight and a half inches above the floor level. It was about on the same plane as the top creel board. This was at the A. M. Smyre Manufacturing Company at Gastonia, North Carolina, where I made that observation.

Q. Did you find in the—or have you completed your answer? A. I had not quite completed.

Q. Pardon me. Go ahead. A. This device in Exhibit 14 has no rigid nozzles extending downwardly toward the machine just the same as is shown in the Holtzclaw patent in suit, although there is an opening in the upper portion of the outlet duct which discharges air near the

center of the machine downwardly on the upper creel board and on the trackway.

Q. I believe you stated how many different outlets for air this apparatus has, this "elephant" trunk device? A. There is one completely rigid outlet and there are the outlets which I have numbered 1, 2, 3 and 5. The outer (258) tube 5 has, as I remember, three outlet holes at its lower end.

Q. State whether or not you find any teaching in the patent in suit of the device of Exhibit 14. A. I think the patent in suit certainly does not include any teaching as to the construction of an underframe cleaner, and the patent in suit did not teach the use of the nozzles, such as is the nozzle 3 here. The teaching of the patent in suit was to the effect that one downwardly extended directed rigid outlet and one inwardly curved flexible nozzle located such as is the nozzle or cuff 2 of Exhibit 14 would clean the entire creel section, the upper end or spools of roving.

Apparently, the plaintiff here decided that the upper nozzle alone, such as nozzle 2 of Exhibit 14, which would correspond to cuff 19 of the patent in suit, would not clean the center portion of the creel part of the machine and so has here done what may be an obvious thing: added another air outlet to direct the air where dirt would collect.

* * * * *

(262) Q. (By Mr. Watts) Mr. Sessions, just to keep the record straight there and all in one piece at this particular time, yesterday we heard testimony as to horsepower of the apparatus of the patent in suit, and the horsepower of the motor on the "elephant" trunk device in Exhibit 14. In one case, it was half a horsepower, and the other, one horsepower. Did you include that with your differences between those two devices? A. Yes. The capacity of a unit to discharge air is relatively proportionate with the horsepower of the motor, so that a unit using a larger horsepower motor can be used to discharge more air and cover a greater surface.

Q. And since they used a larger horsepower motor in the "elephant" trunk apparatus, that blows a greater amount of air, or a greater velocity of air? A. Yes. That's right.

Q. All as contrasted with the apparatus of the patent in (263) suit? A. Yes.

* * * * *

CROSS EXAMINATION BY MR. GRIER.

* * * * *

(274) The Court: He said he went into two mills, and he found one five feet 8½ inches high, I believe, in the Smyre Mill which, as everybody knows, would likely hit the head of almost anybody operating a spinning frame unless she was a pretty short girl.

* * * * *

(285) Q. But you testified that Mr. Holtzclaw's conclusion was obvious. A. Mr. Holtzclaw didn't direct his invention toward underframe cleaning. Now, as far as—

Q. You think then, in other words, that what is illustrated in the drawing in the Holtzclaw patent is not so good, but that if you went along as far as doing all that is done in Plaintiff's Exhibit 16, which is the exhibit I show you, that that would be quite a trick? A. I don't think that was any trick either. In my opinion if one desires to spend the money to build a bigger machine with more nozzles and the cost of that machine can be compensated for by saving of labor, such as if labor costs increase, wages increase, it is a very obvious thing to build a bigger, more expensive machine to cover more (286) area. Entirely obvious and an entirely simple answer to the problem.

* * * * *

(298) Q. Let's take the Defendants' Exhibit F and let me read (299) the language of Claim 6, and let me get you to again point out to me how it is you say it is not described by Claim 6. There is "a trackway disposed

above and longitudinally centrally of said machines, * * *" Do you find that present in the defendant's device? A. Yes.

Q. (Reading): "* * * said cleaner having a motor driven carriage and fan * * *" It has a carriage, doesn't it? A. Yes.

Q. And it has a fan, doesn't it? A. Yes.

Q. And it has a motor for driving the fan? A. Yes. It doesn't have a motor-driven carriage.

Q. All right. The motor for propelling the carriage is in the tri-rail portion of the cleaner; is that right? A. Yes.

Q. And I will ask you if the device shown as Defendant's Exhibit F wouldn't be useless, so far as cleaning is concerned, if it were not used in conjunction with the tri-rail cleaner, for the reason that it doesn't have any means of its own for propelling itself along the track? A. Another means could be used.

Q. Like pulling it along? A. Something or other, yes. You wouldn't need a tri-rail cleaner.

(300) Q. The practice of the American Monorail Company is to install it in conjunction with the tri-rail cleaner similar to that illustrated on Plaintiff's Exhibit No. 2. Is that true? A. Yes.

Q. And the motor in the tri-rail drives it along the track, doesn't it? A. Yes, one of them does.

Q. So that if this particular device indicated by Defendant's Exhibit F be considered by itself, it will not clean because it has got no way to go along the track. Is that right? A. It will not do the job of cleaning unless it is moved along the track; that is right.

Q. Yes. And when you use it in connection with the tri-rail cleaner and consider it and the tri-rail as a unit, then it does have a motor driven carriage and fan. Is that right? A. Well, it does not have this motor driven carriage to which this claim is restricted. The inventor in getting his patent chose to use restrictive language in this claim. Language could have been used and was used in some of the prior patents to Hodge, for example, which was not restricted to a single motor, although in some of

the claims in the prior patents to Hodge I believe language was used which (301) was restricted in this same manner to a single motor for driving the carriage and the fan.

Q. To make it clear, then, you find some distinction in the fact that this device marked F doesn't have its own motor for propelling it along the track? A. That's one of the details of this claim. That's right.

Q. It does have a fan casing, does it not? A casing enclosing the fan? A. Yes.

Q. Does it have an inlet and oppositely positioned outlet conduits? A. Yes.

Q. Do the conduits present a rigid section terminating above the heads of the machine operators when standing? A. Yes. Well, I am sorry. No, they do not. The conduits are rigid, but this element of this claim relates to the rigid outlet, an opening, which terminates above, and this structure of the plaintiff's, the accused structure, has only one outlet duct and that outlet does not terminate, has no opening which is rigid. It doesn't have the two outlet sections on each side of the device of the patent in suit.

Q. Referring to Plaintiff's Exhibit 19, which is the American Monorail Company's "new cleaner for solving the entire cleaning problem," I will ask you to look at it and (302) see if the outlet indicated on that drawing as No. 2 isn't a rigid outlet terminating above head height such as described in the claim? A. Yes. That's not the outlet of the accused structure, however.

Q. Are the conduits at each side on this Exhibit F provided with a cuff in the defendant's device? A. No, I don't think—In my opinion, they are not.

Q. You say this isn't a cuff? A. That's right.

Q. That it's too long? A. Yes.

Q. Would you agree that it's a sleeve? A. It might be called a sleeve. I think it's a duct or a tube.

Q. But you think a sleeve would pass for it? A. It is not of highly flexible material in the sense of the patent in suit.

Q. Watch what happens when I walk by it and indi-

cate whether or not it yields. A. Yes, it does yield. I explained that.

Q. I will ask you if it does not extend from its utmost position in the general direction of the machine? A. No. It extends down the side of the machine.

Q. You draw a distinction between the fact that it (303) comes down parallel to the machines against the fact that it would be directed so as to run smack into them? A. That's right. I think that the patent, which seems to be the basis of this claim, showed and taught the use of highly flexible cuffs which had an inwardly curved end. That—

Q. Let me ask you about that inwardly curved end. Look at Claim 6 and see where you find anything about Claim 6 having an inwardly curved end. A. No, it does not. It says it extends toward the machines.

Q. I will ask you to read on and see if the purpose of them extending toward the machine is not "to enable currents of air produced by the fan and discharged through the cuffs to be directed against the machines and the cuffs to yield upon impingement with an operator or other obstruction in their path of travel." From that language, wouldn't you say that if the cuffs, sleeve, tube or duct is positioned in such a way that it enables currents of air produced by the fan and discharged to be directed against the machines that it would satisfy the requirement of the prior language that it be toward the machines?

(No response.)

Q. In other words, isn't the purpose of the phrase "toward the machines" to indicate the direction in which it (304) pointed in order to get the air directed against the machines? A. Yes. I think it meant transversely across the machines and meant that the cuffs were extended toward the machines so that the air would be directed against the part of the machines to be cleaned; and this long duct of the accused structure has no portion in itself which is directed against or toward the machines.

* * * * *

(305) Q. Refer in column 3 at line 56 to the portion of the patent that says (reading): "Preferably the sleeve or nozzle 19 comprises a cuff of suitable woven fabric which desirably is impregnated with suitable material to make it impervious to the blast of air passing therethrough and is provided with means for retaining it in expanded condition." As an engineer and an informed man, don't you think that from that language and from other language in the patent that you could have built a cuff that would have enabled it to direct the currents of air as directed in the patent and to have yielded upon impingement with an operator or other obstruction so as to have performed the functions of the patent? A. I think I would have had to experiment first to determine how much flexibility, the amount of flexibility or lack of flexibility, or the amount of rigidity that was needed for such a cuff, depending upon the pressure and (306) volume of air being handled and things of that sort, and the operating conditions, all of which will influence and affect the flexibility which could be used satisfactorily.

Q. You could have made one that would have worked all right, couldn't you? A. I say, after some experimentation I might have done that.

Q. The first one would have been pretty close? A. I don't know.

* * * * *

(309) Q. And the other patents you testified about were the Hodge patents that were cited in the patent so the trial examiner must have seen those? A. Yes. I testified about the Smith patents also which were not cited by the Patent Office.

* * * * *

(310) Q. You spoke of having measured the height above floor level of the plaintiff's device at Smyre Company and finding it at one point five feet eight and a half inches. Did you meaure it at some other points, or only at that one? A. That was the height above the floor?

Q. Yes. A. I think the floor was fairly level everywhere. I think that would have been approximately the same everywhere. You mean, wherever the device happened to be? You mean, at other positions in the path of travel of this cleaner?

Q. Yes. A. I think that was about the height everywhere, because I believe the machine was level and the floor was level, and the track was level, so the measurement I made would apply to all positions of the cleaner.

(311) Q. You only measured it out at that one point? A. I did measure it at two or three different—I measured it while it was moving.

Q. Oh, I see. A. And, of course, I walked along with it, and I did that on two or three occasions.

Q. You measured it while the machine was in motion? A. Yes.

Q. And you took your measurements only on one machine and there were other machines and other trackways in that same spinning room, I believe? A. There are other machines and other trackways, yes.

Q. Could you tell— A. (Continuing) —I believe I measured two of those machines, however.

Q. While the machine was in operation? A. Yes. My measurement might ha[illegible] been off an inch either way. I mean, my measurement was indicated between five feet eight and five feet nine inches.

* * * * *

(312)

LLOYD R. MCEACHERN, called as a witness by and on behalf of the Defendant, being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION BY MR. WATTS.

Q. Will you state your full name, age and place of residence, please. A. Lloyd Richard McEachern. Age 36. I live at 200 Sunset Drive, Greenville, South Carolina.

Q. What is your present occupation? A. I dispense the duties of American Monorail Company in the State of South Carolina.

* * * * *

(316) Q. I call your attention to Defendant's Exhibit F, that has been referred to as a trailer, as you are aware. Does the defendant have any other apparatus which might be termed as a trailer? A. Yes, we have several items.

Q. Would you name them? A. Well, besides this underframe cleaning device, we have a frame cleaning device and a ceiling cleaning device, and several not only that operate from this particular type of rail, but also from overhead supported rail and—You just referred to the textile industry?

Q. Yes, we might limit ourselves to that. We will (317) cover the other industry general material handling— A. By material handling we have many devices that are trailers that perform many different functions.

Q. Does Exhibit 19 illustrate several devices, none of which is self-propelled? A. None of which are self-propelled.

Q. Which ones on that exhibit are not self-propelled? A. Well, of the three items that we find here, the creel cleaning device is not self-propelled.

Q. That's the first one. A. That's right.

Q. That's the tri-rail cleaner, is it? A. That's the tri-rail cleaner. The ceiling cleaning device, which is shown second, is not self-propelled; and the device shown third, which is the underframe cleaning unit, is not self-propelled.

Q. Are those different devices hooked together in some way? A. They are tied together when the occasion demands it, when the customer demands it, or when the customer desires it, or when it will serve a specific purpose.

Q. And how do you tie them together? A. We tie them together with a draw bar.

Q. Just a straight metal bar? A. Straight metal bar.

(318) Q. What propels that train of these several

units? A. We have standardized on a small tractor which can be attached to any one of those three devices.

Q. And how does that propel the train? A. Through a gear head motor and a V belt, steel on steel.

Q. And a wheel running on top of the tri-rail? A. That is correct.

* * * * *

Q. Did you lose any orders for textile cleaning machinery and specifically spinning frame cleaning equipment this past year to plaintiff?

* * * * *

(321) The Court: I think he has answered it. He can if he has not already done so.

Q. (By Mr. Watts) Did you? A. Yes, sir.

Q. Have you any direct knowledge of threats made to one of your customers as the result of which you were not given the order for the spinning frames and the Parks-Cramer Company did obtain it? A. Yes, sir.

Mr. Grier: Object.

The Court: I do not see the materiality of that, because the inquiry itself is largely upon whether or not your alleged infringing machine has to do with depredations against his admitted patent. That is about the whole item we have for determination.

Mr. Watts: I thought I was entitled to corroborate, shall we say, Mr. Grainger in his threat, and that was what (322) I was planning.

The Court: You cannot want a better evidence than admission against interest, and that is what he did.

Mr. Watts: I think there is much in what your Honor says.

The Court: If a fellow admits he did something, you would not want any better evidence than that. It may take you a week to prove it, and he can tell you in the twinkling of an eye if he did it.

Mr. Watts: As he did.

The Court: That is right. He was very frank about it.

* * * * *

CROSS EXAMINATION BY MR. GRIER.

* * * * *

(332) Q. (By Mr. Grier) Does the loom cleaner which you have installed in the Monarch Mill in Union, South Carolina, operate on a track? (333) A. Yes, sir, it operates on a trackway.

Q. Over a series of looms? A. Yes.

Q. And does it consist of a fan? Does it have a fan? A. It is rather complicated. It blows, yes.

Q. And the fan is in a casing, is it not? A. Yes.

Q. And it has some means attached to it for propelling it along the track? A. Yes.

Q. And the metal outlets through which the air is blown terminate above head height, do they? A. They do not.

Q. They do not in your loom cleaner? A. No.

Q. They extend how far toward the floor, would you say? A. They are exactly five feet eight and a half from the floor.

Q. All right. They are five feet eight and a half from the floor? A. That's right.

Q. And to those has been attached flexible sleeves? A. I wouldn't call it a flexible sleeve, no.

Q. Has there been attached to it a sleeve similar to the one which is attached to Exhibit F? (334) A. No.

Q. Describe the sleeve that has been attached. A. The item that has been attached is made out of a very heavy gasket material, and it is conically shaped with the apex cut off, and it doesn't yield very much upon hitting anyone.

Q. Would it yield to such an extent that it would not hurt them if it hit them? A. No, I don't think there is any advantage over a metal cuff; in fact, we had metal cuffs on them.

Q. Answer the question. Would it yield to such an extent that if it came in contact with some person leaning over the loom it would not hurt them? A. No, I think it would give them a pretty good wallop.

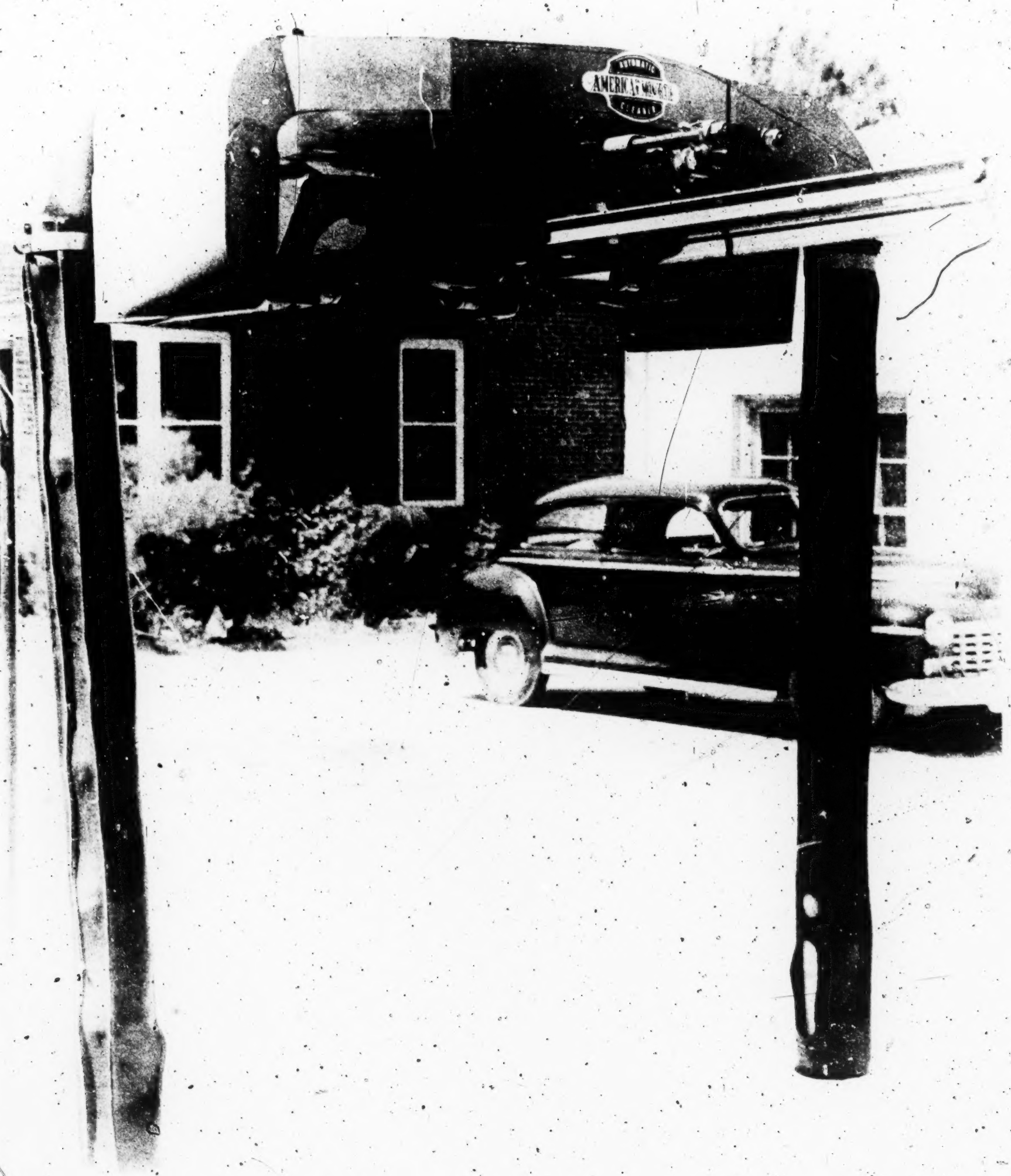
Q. You think rather than the sleeve bending it would knock them away? A. I believe it would, yes, sir.

Q. That is not flexible if it doesn't do that. You say you first had metal cuffs? A. We first had metal cuffs, yes.

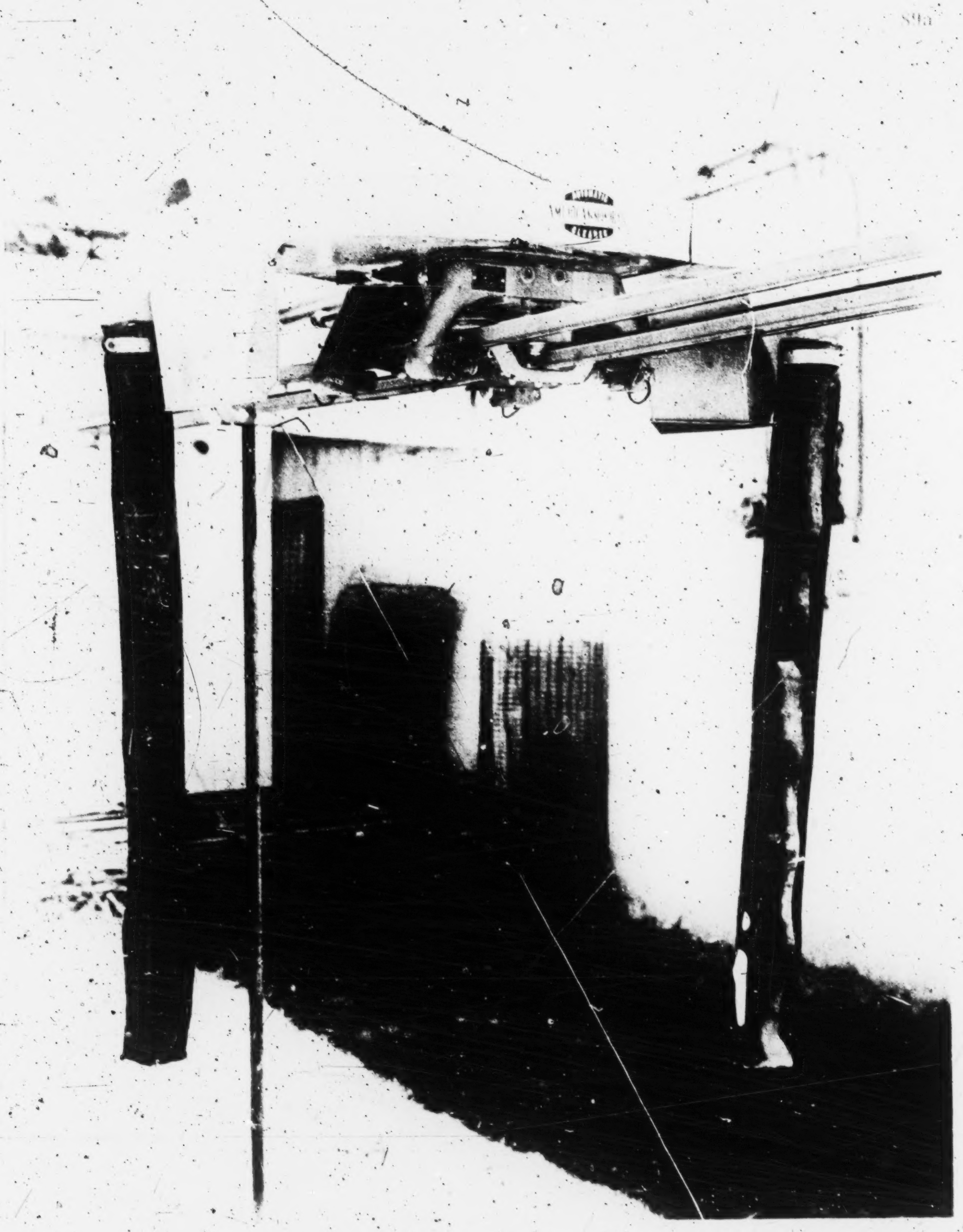
Q. What was the occasion for putting this other type sleeve which you have described? A. Well, we didn't have the size that we wanted, and we simply made up these things in our office and put them on there with the correct length we wanted.

(325) Q. So the flexible sleeve as an addition to the loom cleaner is something you just made up as a temporary expedient? A. We made it up for that particular application because it was quick to do and we made it the size we wanted.

* * * * *



PLAINTIFF'S EXHIBIT 10.
American Monorail's Flexible Sleeve Cleaner
which was Installed in Fayetteville.



PLAINTIFF'S EXHIBIT 11

American Monorail's Flexible Sleeve Cleaner
which was installed in Fayetteville

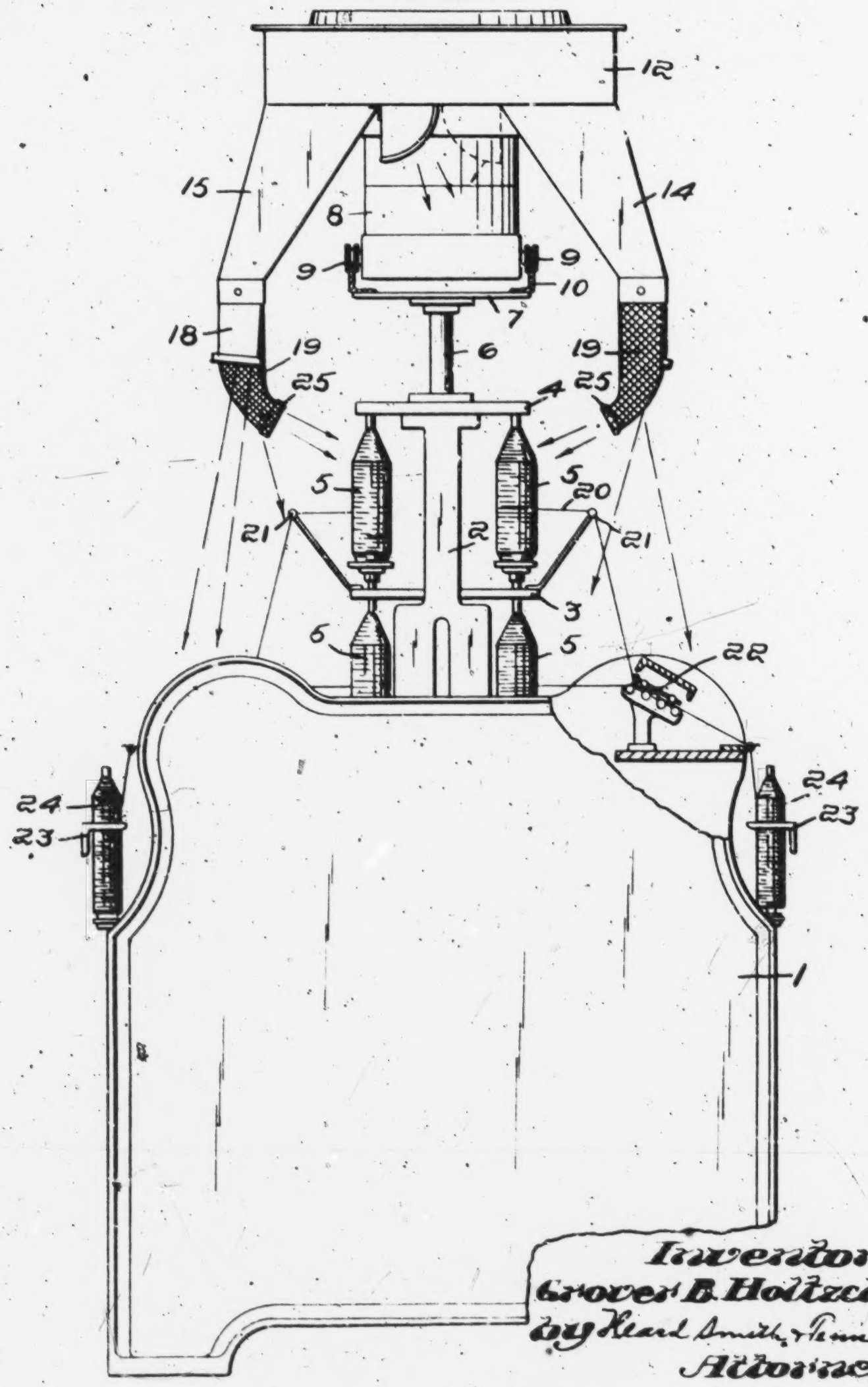
PLAINTIFF'S EXHIBIT 12.

Oct. 10, 1950 G. B. HOLTZCLAW 2,524,797

TRAVELING CLEANER FOR TEXTILE MACHINES OR THE LIKE

Filed Dec. 12, 1947 2 Sheets-Sheet 1

Fig. 1.



Inventor:
Grover B. Holtzclaw,
by Kearl Smith & Pennant
Attorneys

Oct. 10, 1950 G. B. HOLTZCLAW 2,524,797

TRAVELING CLEANER FOR TEXTILE MACHINES OR THE LIKE

Filed Dec. 12, 1947 2 Sheets-Sheet 2

Fig. 2.

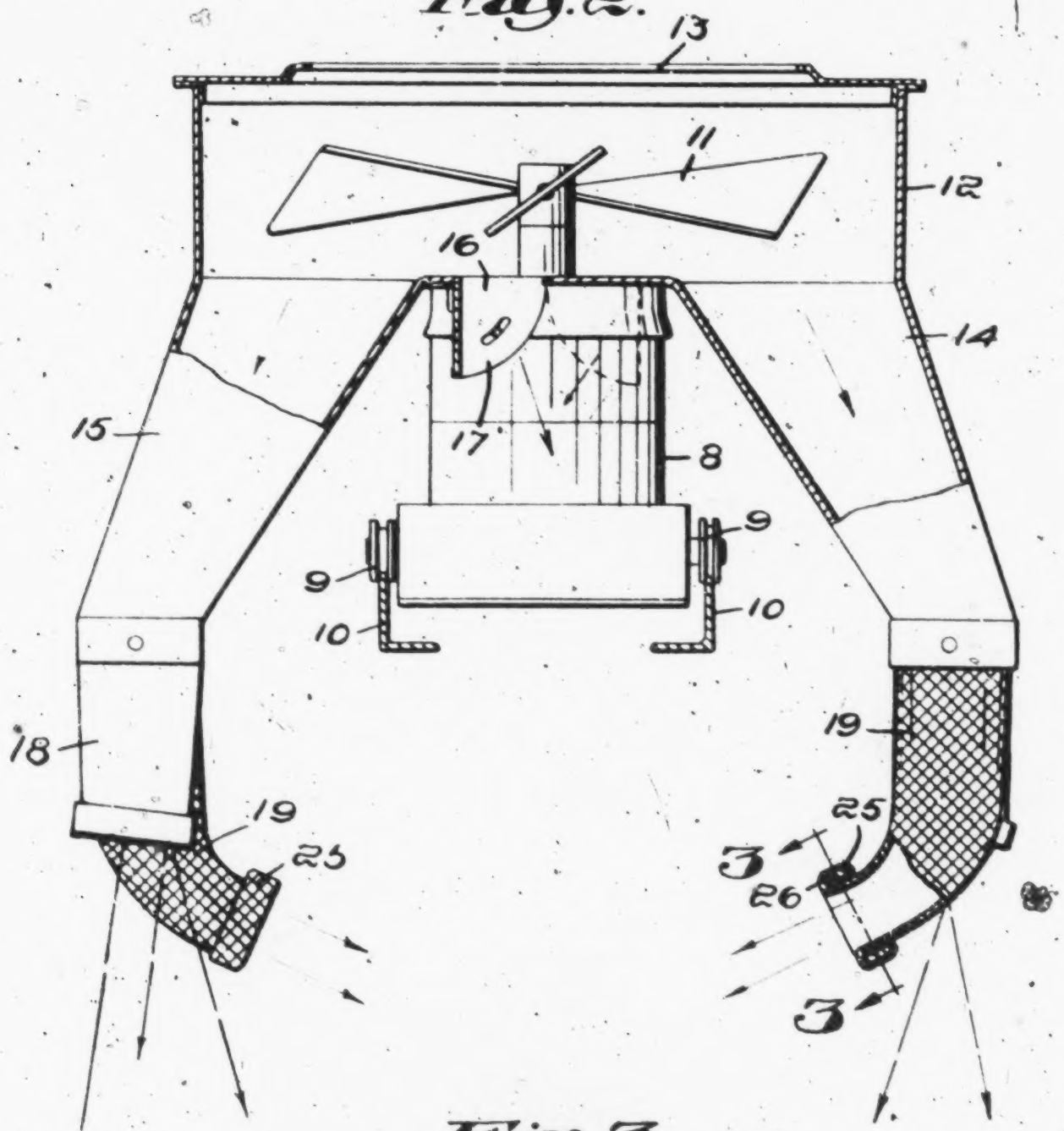


Fig. 3.

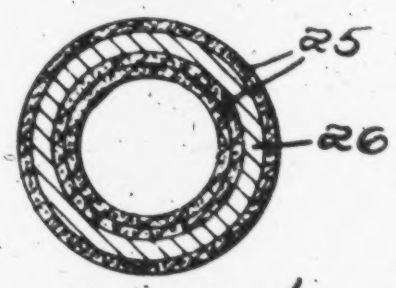
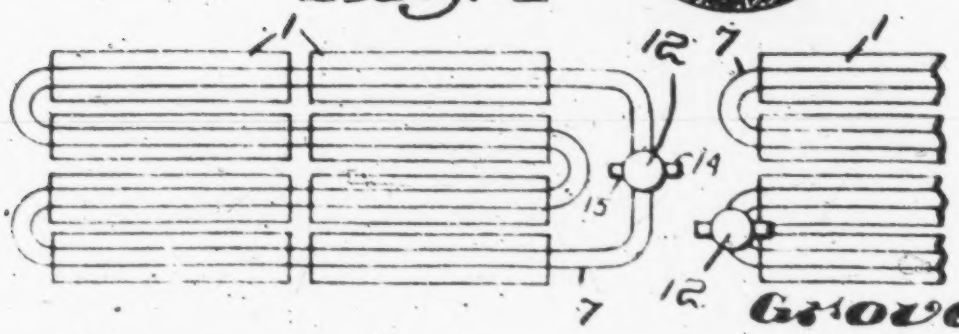


Fig. 4



Inventor:
Grover B. Holtzclaw,
By Heard Smith & Pennant
Attorneys

Patented Oct. 10, 1950 2,524,797

UNITED STATES PATENT OFFICE

2,524,797

TRAVELING CLEANER FOR TEXTILE MACHINES OR THE LIKE

Grover B. Holtzclaw, Charlotte, N. C., assignor to Parks-Cramer Company, Fitchburg, Mass., a corporation of Massachusetts

Application December 12, 1947, Serial No. 791,349

6 Claims. (Cl. 15—312)

1

This invention relates to improvements in traveling cleaners for textile machines or the like in which the traveling cleaner comprises a carriage having a motor and a rotatable fan mounted upon a trackway extending longitudinally above and centrally over a plurality of machines which are arranged in longitudinal alinement. Means operable by the motor are respectively provided for propelling the carriage along the trackway and for rotating the fan. A housing which surrounds the motor is provided with outlet conduits for currents of air produced by the fan arranged transversely of the direction of travel of the cleaner and extending downwardly and outwardly. The end of each conduit is provided with means respectively to direct a blast of air downwardly upon the side of the machine therebeneath and to direct a blast of air transversely across the machines as the cleaner travels along the trackway.

In usual installations of textile machines a plurality of series of longitudinally alined machines are arranged in parallelism with the section of the trackway extending longitudinally of the machines of each series and connected to the trackway of another series by U-shaped bends to provide a continuous trackway over all the machines.

Groups of such parallel series are also arranged in longitudinal alinement with aisles between the ends of the respective groups through which the operatives pass frequently in attending to the machines.

Typical traveling cleaning mechanism and the arrangement thereof of the character above described are disclosed in the following patents granted to William B. Hodge, Nos. 2,047,558 July 14, 1936, 2,128,207 August 23, 1938, and 2,184,880 December 26, 1939, and therefore need not be illustrated and described in detail as the present invention relates only to improvements in the mechanism for directing the blasts of air delivered by the fan. In usual traveling cleaners of the type above described the end of each air conduit which extends from the fan casing is provided with two preferably adjustable sleeves or nozzles one of which directs the blast of air downwardly upon the side of the machine therebeneath and the other of which directs the blast of air transversely across the machine. Each of the sleeves or nozzles usually terminates above the top of the machine and is ineffective in satisfactorily preventing deposition or accumulation of lint and the like upon rigid parts of the machines not located in the direct paths of the

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blasts of air, or upon mechanism for the material being treated located closely therebeneath. For example, in the use of the traveling cleaner for cleaning a spinning frame blasts of air are not fully effective in preventing accumulation of lint and the like upon the lower face of the creel board and upon the spools of roving located closely therebeneath and the deposition or accumulation of bunches of lint upon the roving running from said spools.

One of the objects of the invention is to provide a traveling cleaner of the type described with a nozzle for more effectively directing the current of air which is projected transversely across the machines at a predetermined height thereby more effectively to prevent accumulation of lint, etc. upon such stationary parts of the machine and upon the material being treated thereby.

Another object of the invention is to provide a highly flexible nozzle or nozzles particularly that, for transmitting the current of air transversely across the machine which will yield upon impingement with an obstruction in the path thereof such as the presence of an operator in the aisle between adjacent groups of machines thereby preventing injury to the operator.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawings and will be particularly pointed out in the claims.

An illustrative embodiment of the invention is shown in the drawings as employed for cleaning a textile machine, in which,

Fig. 1 shows an end elevation of a spinning machine and trackway mounted thereon supporting a traveling cleaner and illustrating the present invention as embodied in said cleaner for directing a current of air transversely across the machine at a predetermined height;

Fig. 2 is an enlarged detail view, partially in transverse vertical section, and showing in elevation a preferred form of flexible nozzle for directing the blast of air transversely of the machine;

Fig. 3 is a transverse sectional view on line 3—3 Fig. 2; and,

Fig. 4 is a diagrammatic plan view of a group of parallel series of alined machines with an endless trackway extending longitudinally over the machine and traveling cleaner mounted thereon and an aisle between alined groups of machines.

The spinning machine is of a usual character comprising end frames 1 having standards 2 mounted thereon supporting the usual creel boards 3 and 4 with spools of roving 5 therebetween and posts 6 extending upwardly from

the standards 2 supporting a trackway 7 which as above described extend longitudinally of a plurality of or an alined series of spinning frames. A motor driven carriage 8, which has wheels 9 mounted upon parallel angle bars 10 extending longitudinally of and forming part of the trackway, is driven by a motor. A preferably horizontal fan 11 is mounted upon a vertical shaft extending upwardly from the carriage 8 and is driven by the motor therein. A preferably cylindrical casing 12, which encloses the fan, is provided at its upper end with a central air inlet 13 and has at its lower end downwardly and outwardly extending and downwardly converging conduits 14 and 15 for conducting currents of air produced by the fan. The fan casing is also provided adjacent the carriage with outlets 16, diametrically disposed adjacent the carriage 8, which are provided with adjustable dampers 17 for controlling and directing downward currents of air upon the machines therebeneath.

Each of the conduits 14 and 15 has preferably adjustably secured to its lower end a downwardly extending sleeve or nozzle 18 for directing the blast of air therefrom downwardly upon the side of the machine therebeneath and also a downwardly extending sleeve or nozzle 19 for directing a current of air transversely across the machine. The conduits 18 and 19 are so disposed as to provide a leading and a trailing nozzle for each of the conduits 14 and 15 and the leading and trailing nozzles are reversely arranged upon the conduits 14 and 15.

In the present invention either or both of the nozzles may be of highly flexible material adapted to yield upon impingement of an obstruction in the path of travel of the nozzles. Preferably the nozzles 18 of the machine are of rigid material and terminate at such height as not to engage an obstruction such as an operator passing through the aisle between groups of machines. The nozzle 19, which conducts the blast of air transversely of the machines, is of highly flexible material and extends well below the end of the nozzle 18 and is provided with an inwardly curved and preferably tapering end portion which is positioned at such predetermined height as to direct the air inwardly beneath the creel board 4 thereby to prevent accumulation of lint upon the under face of the creel board or upon the spool of roving 5 and the strand 20 leading therefrom through the usual guide eye 21 and drawing mechanism 22 to the ring rail 23 having the usual ring and traveler for spinning and winding the strand 20 upon the bobbin 24.

Preferably the sleeve or nozzle 19 comprises a cuff of suitable woven fabric which desirably is impregnated with suitable material to make it impervious to the blast of air passing therethrough and is provided with means for retaining it in expanded condition. As illustrated in Fig. 3 the end 25 of the cuff is folded around a thin ring 26 of rigid material which is permanently secured within the folds thereof. The cuff may be of any desired length to position its outlet at such predetermined height as to direct the current of air transversely across the machine closely beneath the creel board of the spinning frame, or beneath similar obstructions in other machines, thereby effectively to prevent or remove accumulation upon parts thereof which otherwise would obstruct such transverse blasts of air. The cuff of flexible material will yield upon impingement with any obstruction in its path such as the presence of an operator passing through the aisle between adjacent alined series of machines such as are illustrated in Fig. 4 of the drawings.

It will be understood that the particular embodiment of the invention shown and described herein is of an illustrative character and not restrictive and that various changes in form, construction and arrangement of parts may be made within the spirit and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, a fan casing enclosing the fan having an inlet and oppositely positioned downwardly and laterally extending outlet conduits terminating above the machines for currents of air produced by the fan, and each of said conduits having at its end rigid means for directing a blast of air downwardly upon the sides of the machines therebeneath, of means for directing a blast of air transversely across the machines comprising a cuff of highly flexible material extending downwardly from one of said outlet conduits and provided with an inwardly curved end portion directed across the machine at a predetermined height.

2. The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, a fan casing enclosing the fan having an inlet and a pair of oppositely positioned downwardly and laterally extending rigid outlet conduits for currents of air produced by the fan, each of said conduits having at its end a nozzle for respectively directing blasts of air downwardly upon the side of the machine therebeneath, of means for directing blasts of air transversely across the machine comprising an inwardly curved cuff of highly flexible substantially impervious fabric extending downwardly and inwardly from each one of said outlet conduits at such predetermined height as to prevent deposition of lint and dust from accumulating on the material being processed by the machines.

3. A traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, a fan casing enclosing the fan having an inlet and oppositely positioned downwardly and laterally extending rigid outlet conduits for currents of air produced by the fan, each of said conduits having at its end a leading and a trailing nozzle one of which is of rigid material terminating above the machines for directing a blast of air therefrom downwardly upon the side of the machine therebeneath and the other of which is of greater length extending alongside the machine and of substantially im-

pervious fabric having an inwardly curved, converging end portion for directing the blast of air therefrom transversely across the machine at a predetermined height and yieldable upon impingement with an obstruction in its path of travel.

4. A traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, a fan casing enclosing the fan having an inlet and oppositely positioned downwardly and laterally extending outlet conduits for currents of air produced by the fan, each of said conduits having at its end a leading and a trailing nozzle one of which is of rigid material terminating above the machines for directing a blast of air therefrom downwardly upon the side of the machine therebeneath and the other of which is of greater length extending alongside the machines and of substantially impervious fabric having an inwardly curved, converging end portion for directing the blast of air therefrom transversely across the machine at a predetermined height and yieldable upon impingement with an obstruction in its path of travel, and means at the end of said cuff for retaining it in expanded position.

5. The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, a fan casing enclosing the fan having an inlet and oppositely positioned downwardly and laterally extending outlet conduits for currents of air produced by the fan, of a leading and a trailing nozzle for each of said conduits, one of which nozzles is of rigid material for directing a blast of air therefrom downwardly upon the sides of the machines therebeneath and the other of which is provided with a downwardly extending cuff of substantially impervious fabric extending alongside the machines and has an inwardly curved, converging end portion for directing the blast of air therefrom transversely across the machines at a predetermined height and yieldable upon impingement with an obstruction in its path of travel, the end of said fabric cuff being folded around and secured to a thin ring to retain it in expanded position.

6. The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines, said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, and a fan casing enclosing the fan having an inlet and oppositely positioned outlet conduits, of the construction in which the said conduits present a rigid section terminating above the heads of the machine operators when standing, and in which the said conduits at each side are provided with a cuff of highly flexible material extending therefrom toward the machines to enable currents of air produced by the fan and discharged through the cuffs to be directed against the machines and the cuffs to yield upon impingement with an operator or other obstruction in their path of travel.

GROVER B. HOLTZCLAW.

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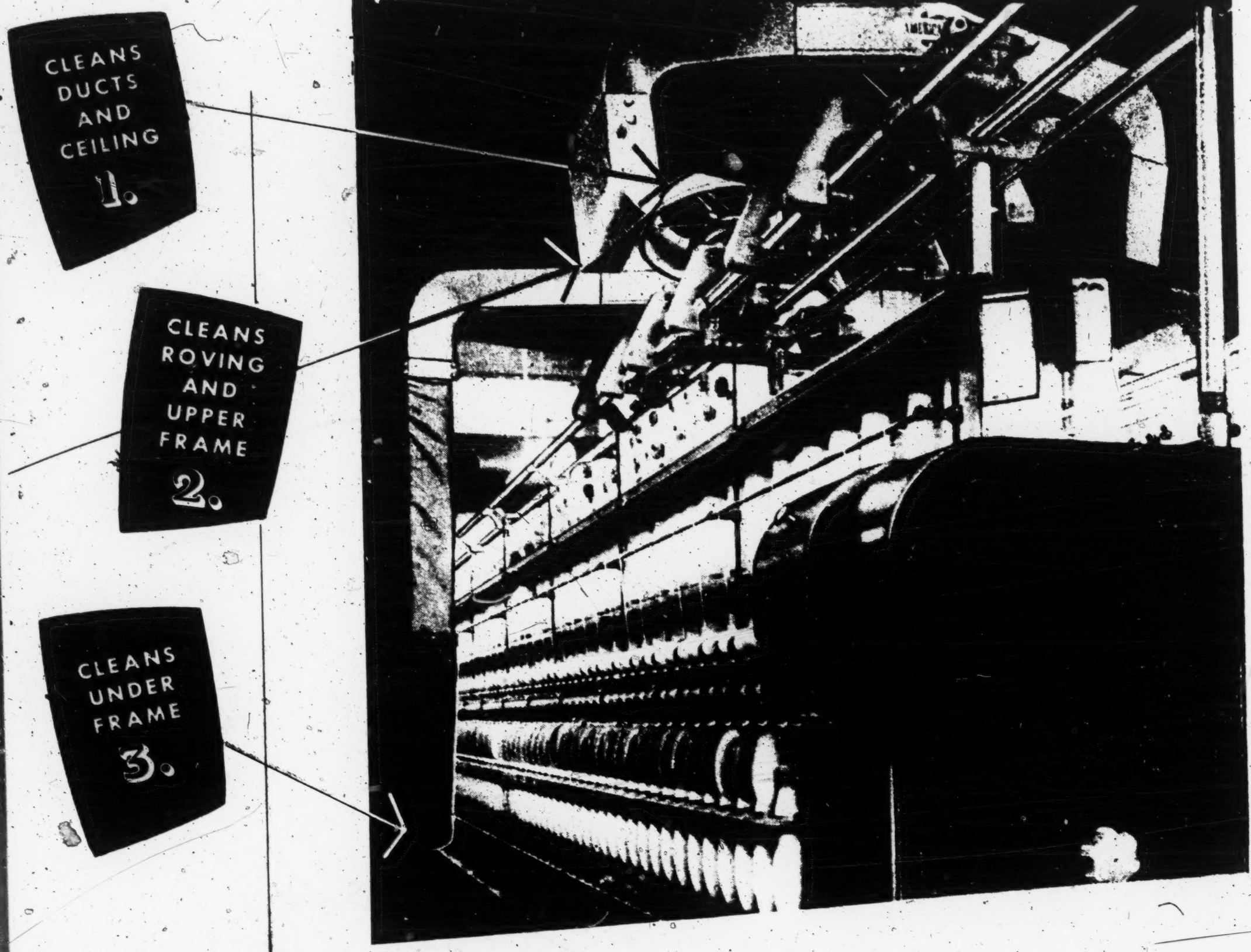


NEW

CLEANER SOLVES ENTIRE CLEANING PROBLEM

This new American MonoRail Cleaner sends controlled currents of air across three separate areas—

1. A high velocity air foil type fan cleans all ceiling areas.
2. A turbo type fan sends controlled air currents across roving and creel.
3. Another separate turbo fan directs high velocity currents toward the areas under the frame.

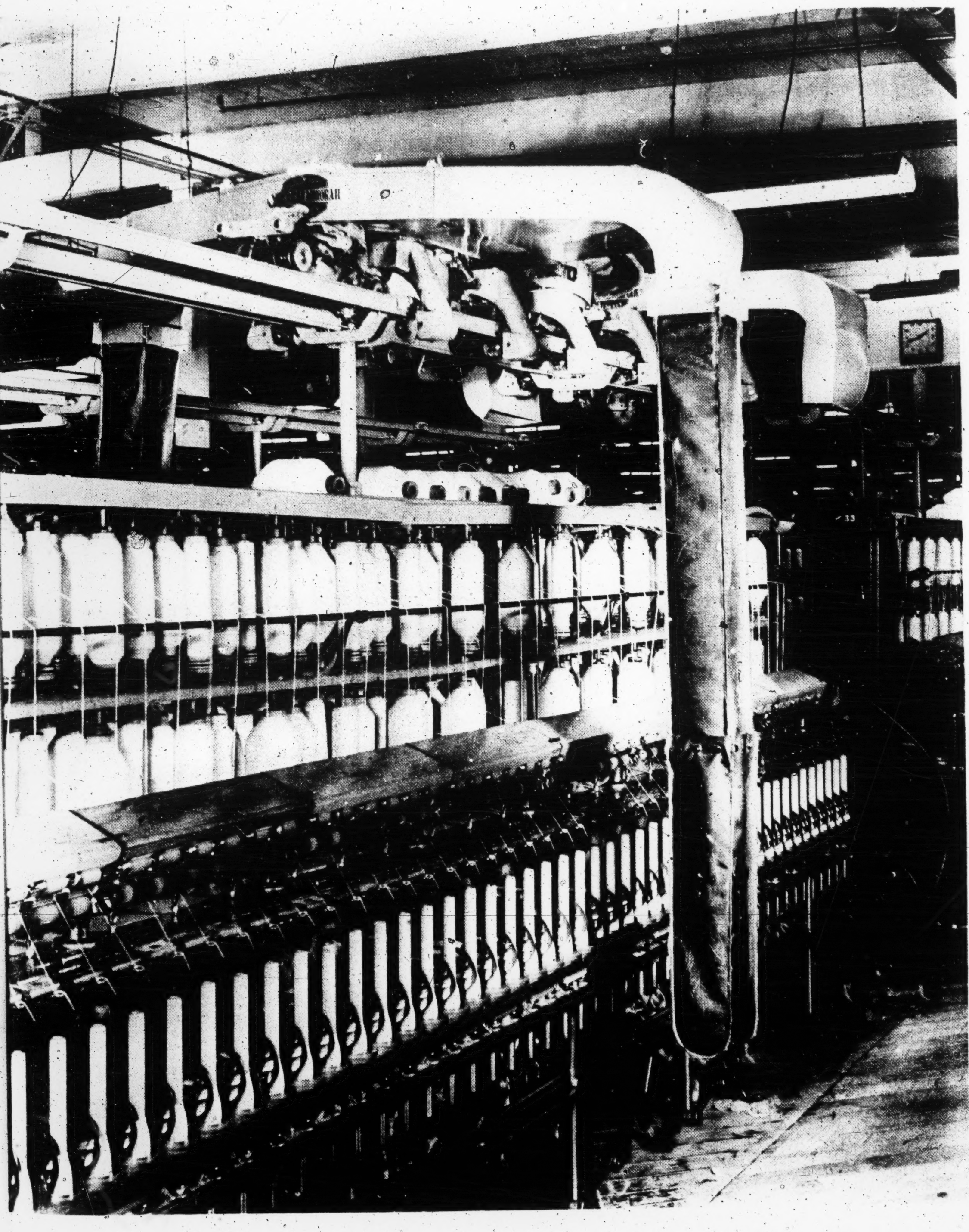
Travelling automatically as a unit, this new American MonoRail Cleaner covers as many as twelve frames depending on mill conditions.

Let an experienced engineer recommend the type of cleaning to give greatest coverage in your mill.

AMERICAN MONORAIL COMPANY
OVERHEAD HANDLING EQUIPMENT
13106 ATHENS AVENUE • CLEVELAND 7, OHIO

PLAINTIFF'S EXHIBIT 19.
Ad of Cleaner Charged to Infringe Patent in Suit.

Exhibit A 19



PLAINTIFF'S EXHIBIT 20.

American Monorail's Flexible Sleeve Cleaner Installed in Tronton Cotton Mills.

Exhibit B 20

PLAINTIFF'S EXHIBIT 24.

July 14, 1936. W. B. HODGE 2,047,558

CLEANING APPARATUS FOR MACHINERY

Filed July 21, 1933 2 Sheets-Sheet 1

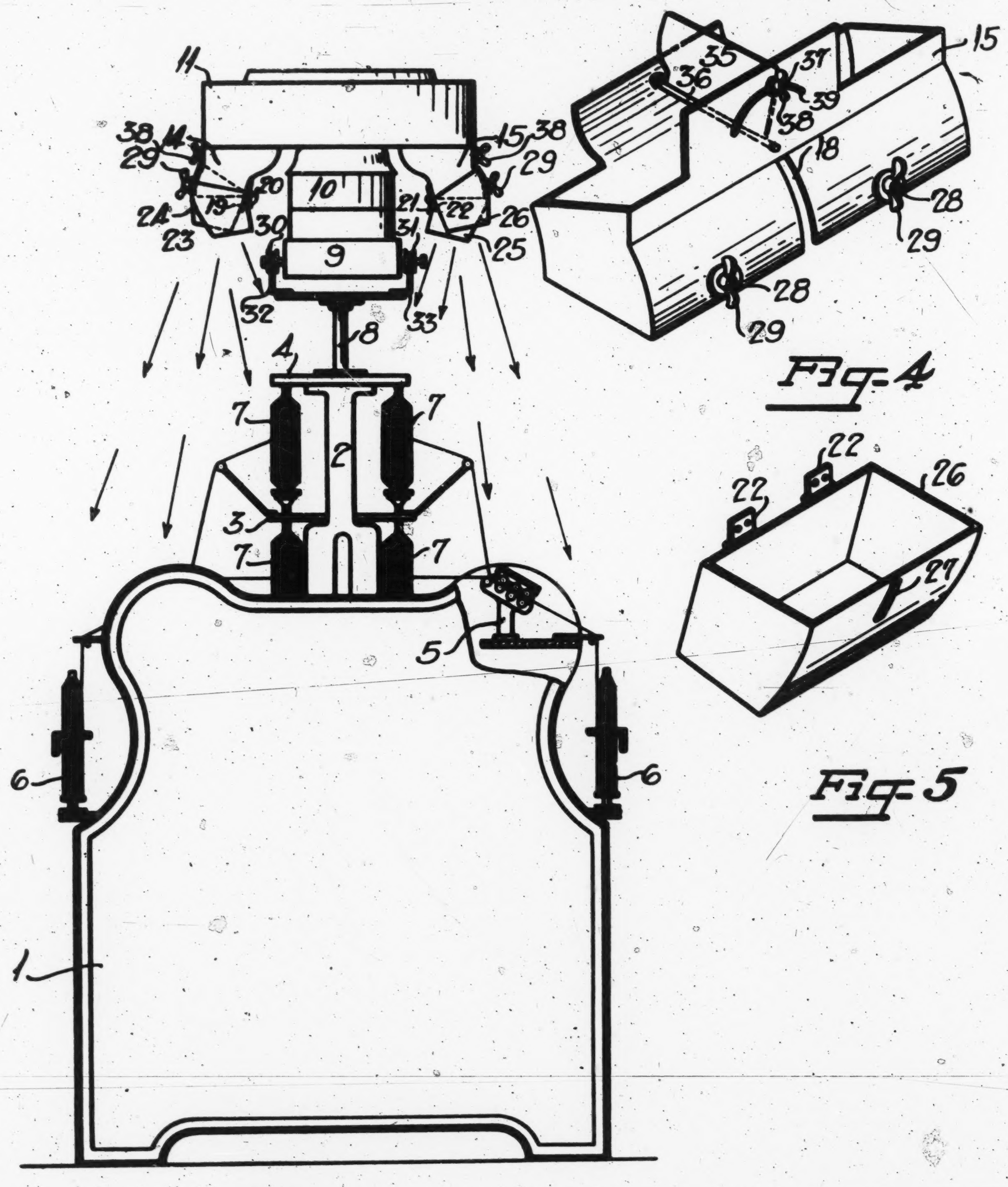


Fig-1

Fig-4

Fig-5

WILLIAM B. HODGE
Inventor

By Powell & Eaton

Attorney

Note

Pages 107a - 109a are on card 6.
(Even numbered pages when not reproduced, are blank pages)

July 14, 1936. W. B. HODGE 2,047,558

CLEANING APPARATUS FOR MACHINERY

Filed July 21, 1933 2 Sheets-Sheet 2

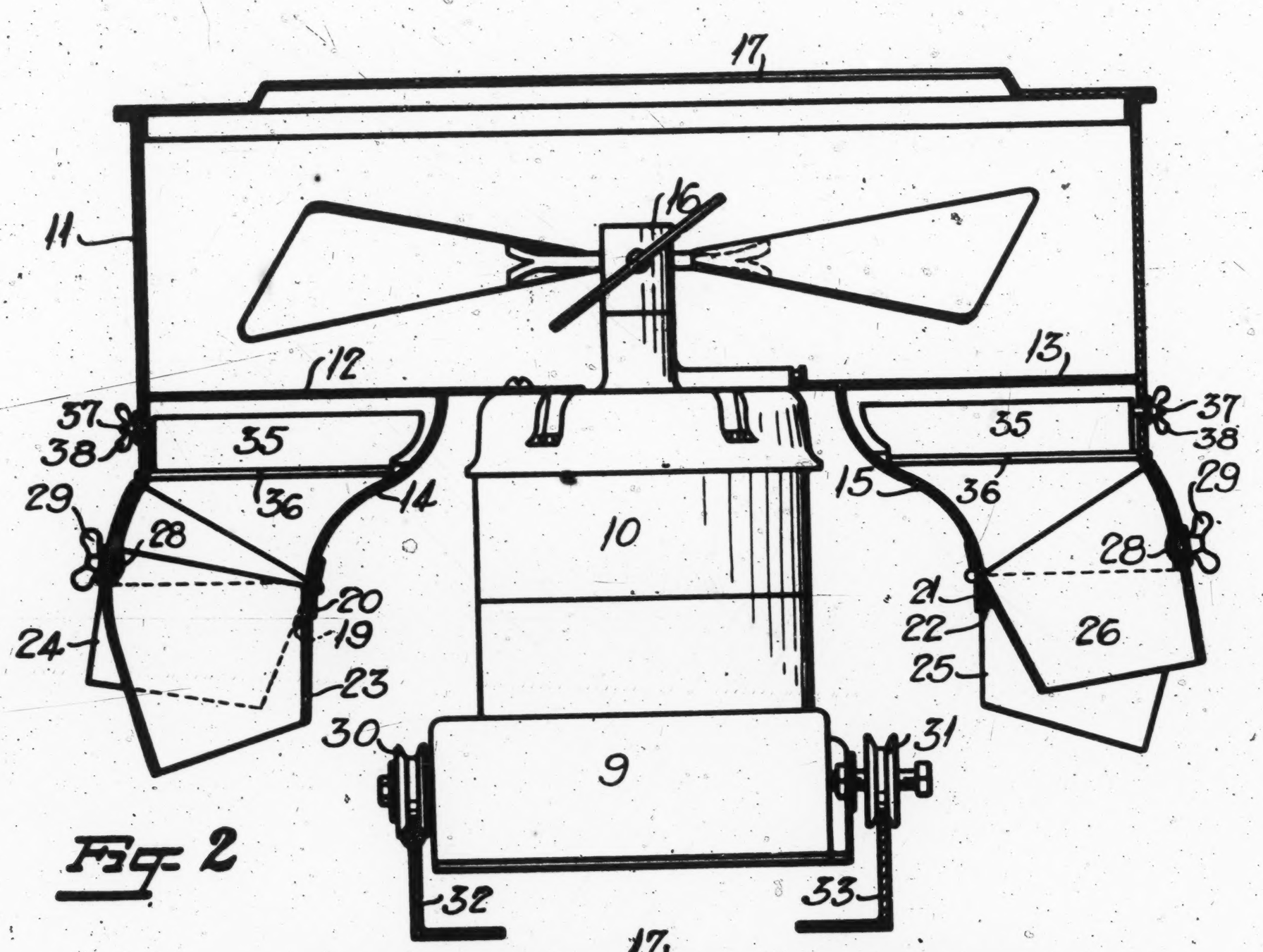


Fig. 2

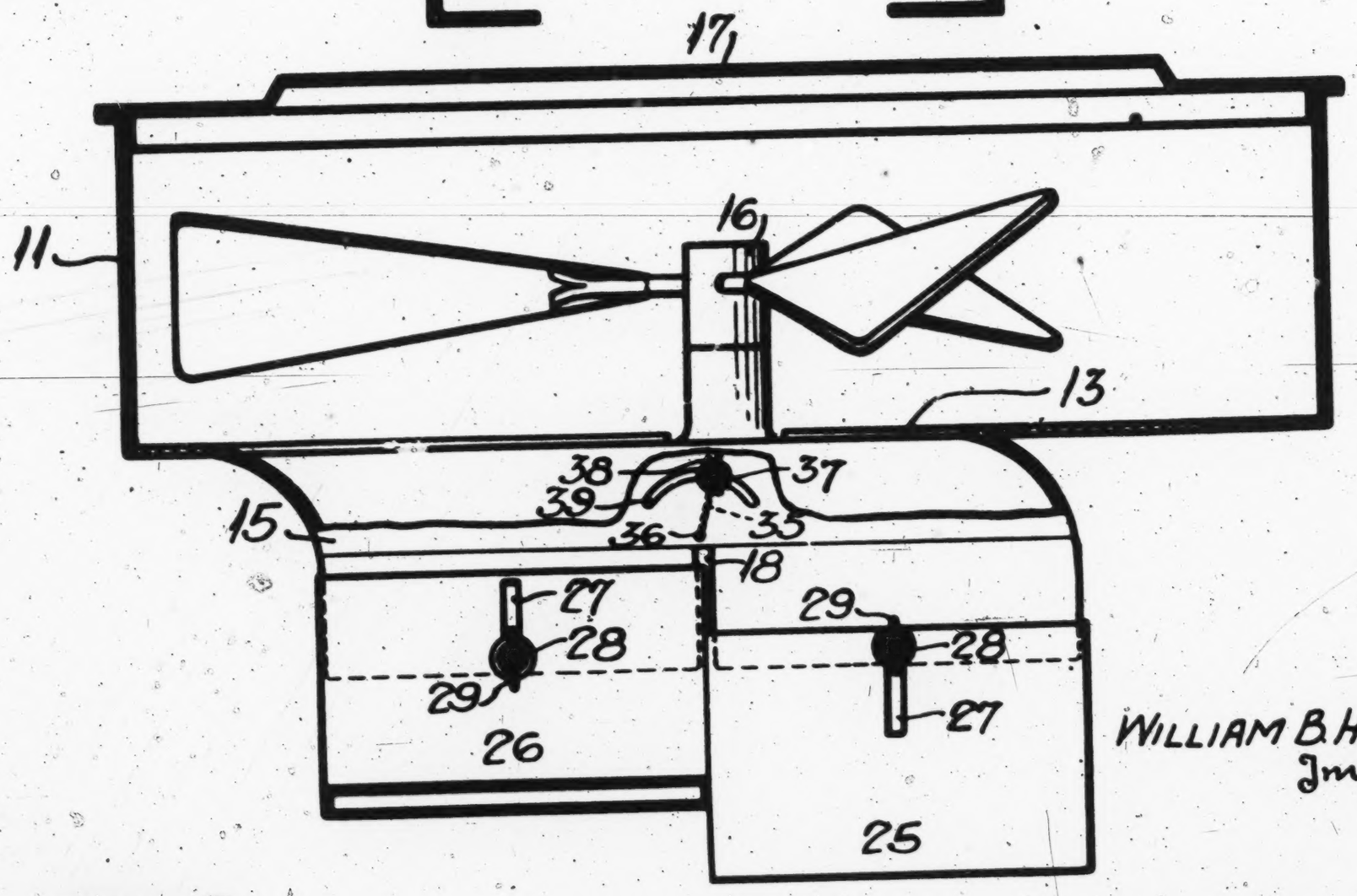


Fig. 3

WILLIAM B. HODGE
Inventor

By Pauer & Eaton
Attorney

PLAINTIFF'S EXHIBIT 29.

Aug. 1, 1933. **W. J. SMITH** **1,920,768**

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Dec. 31, 1928 5 Sheets-Sheet 1

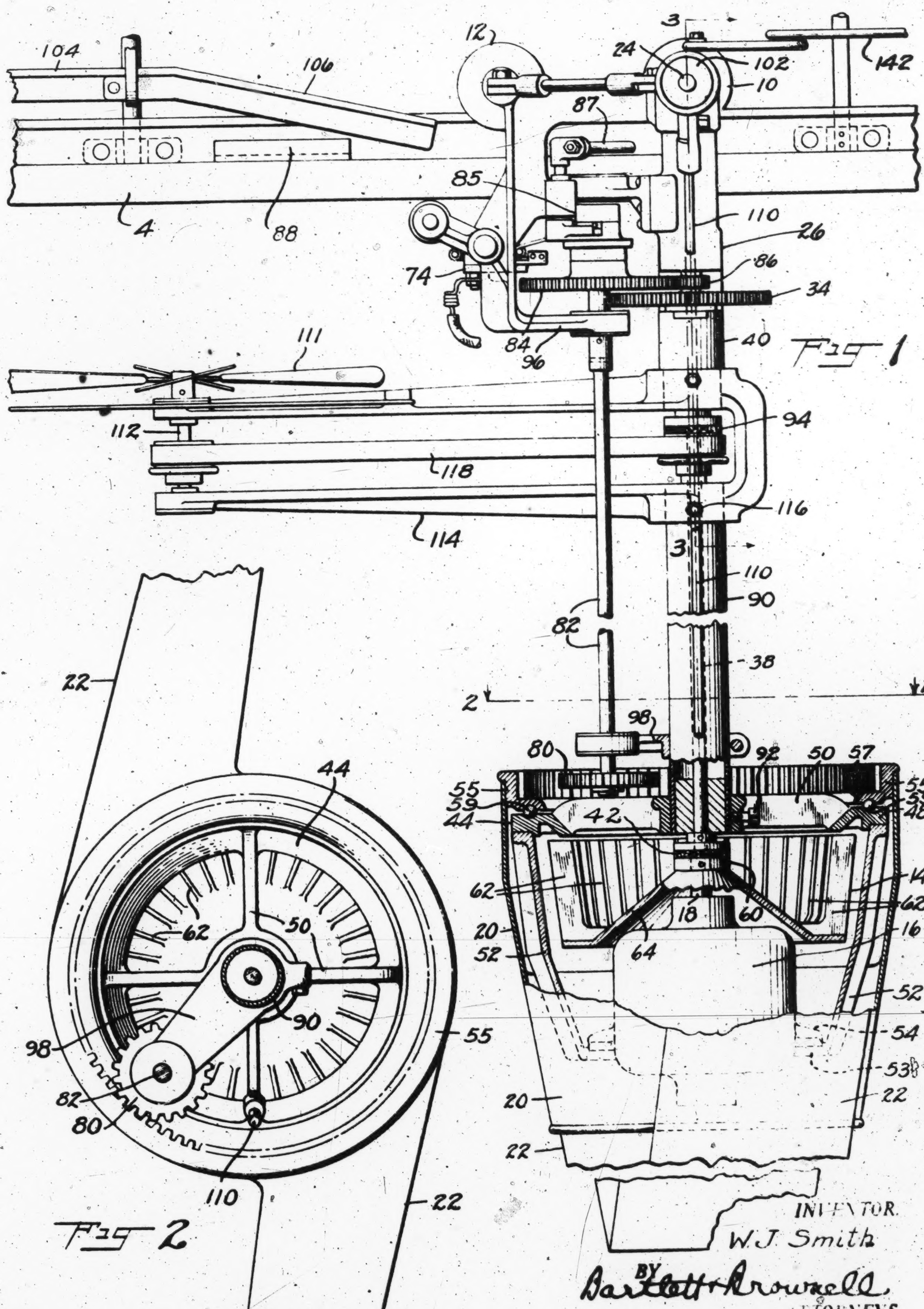


Fig 1

Fig 2

INVENTOR.
W.J. Smith
BY
Bartlett & Brownell.
ATTORNEYS.

Aug. 1, 1933. W. J. SMITH 1,920,768

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Dec. 31, 1928 5 Sheets-Sheet 2

Fig 3

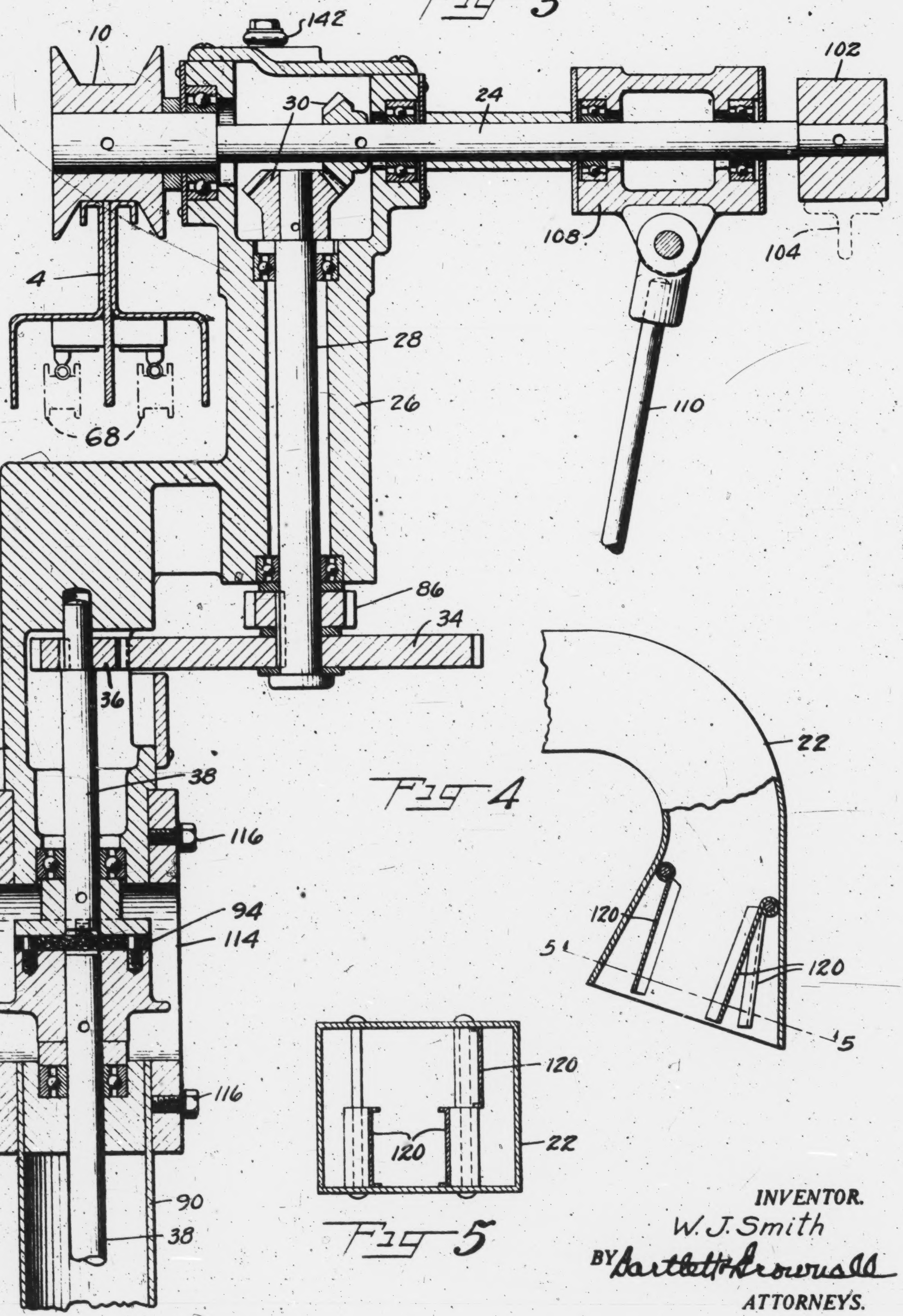


Fig 4

Fig 5

INVENTOR.
W. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

Aug. 1, 1933. W. J. SMITH 1,920,768

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Dec. 31, 1928 5 Sheets-Sheet 3

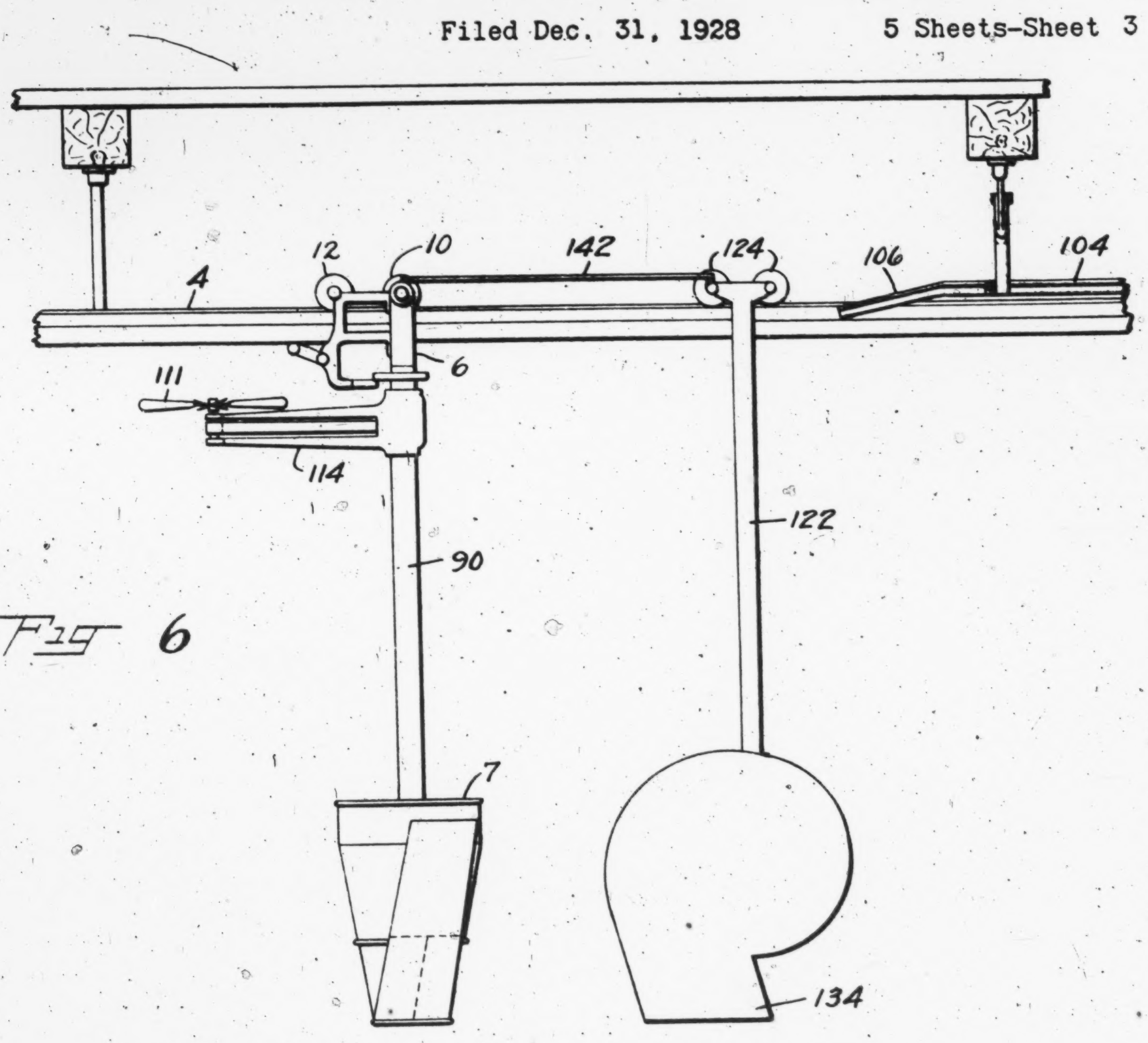
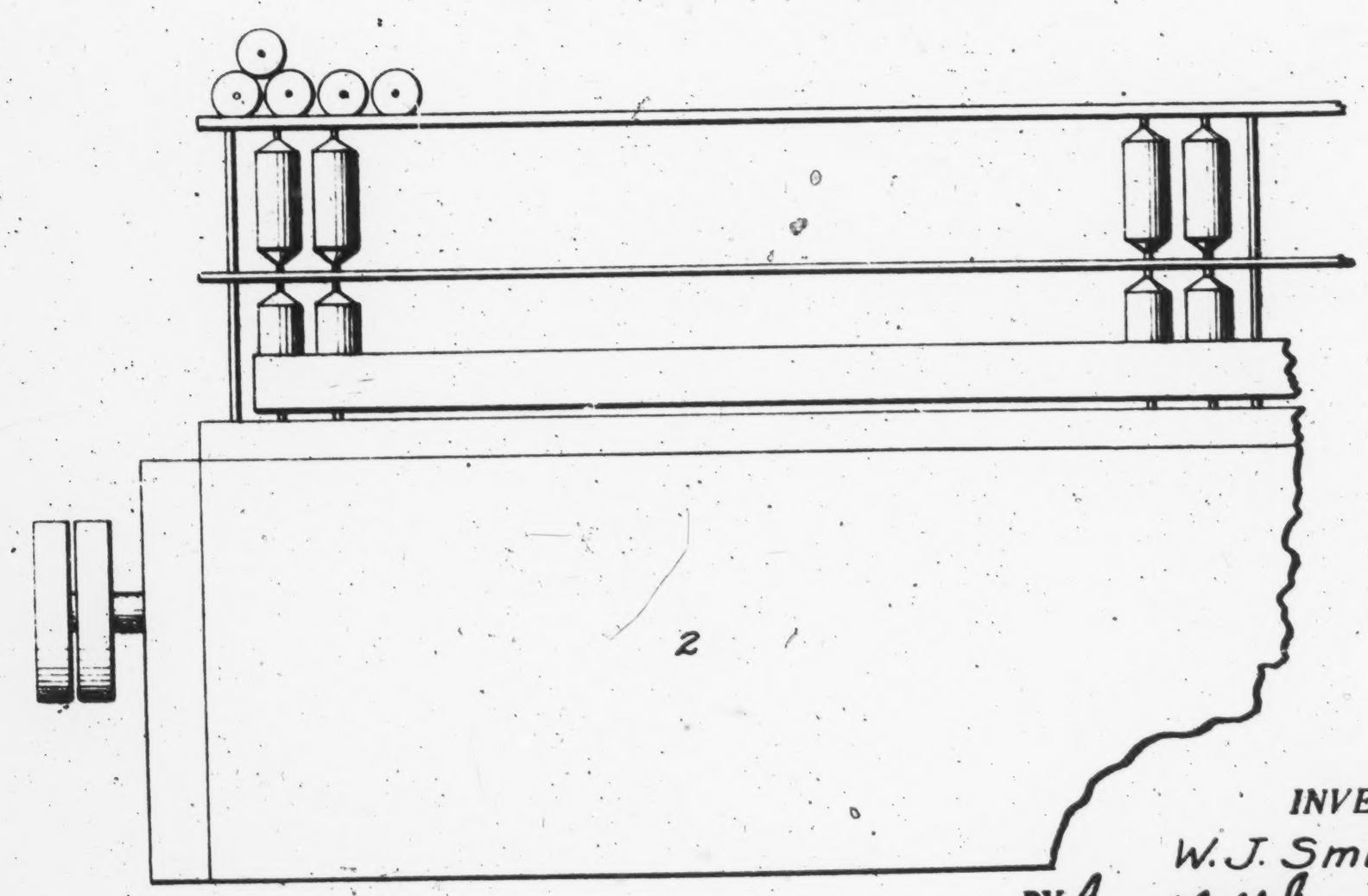


Fig 6



INVENTOR.
W. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

Aug. 1, 1933. W. J. SMITH 1,920,768

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Dec. 31, 1928 5 Sheets-Sheet 4

Fig 7

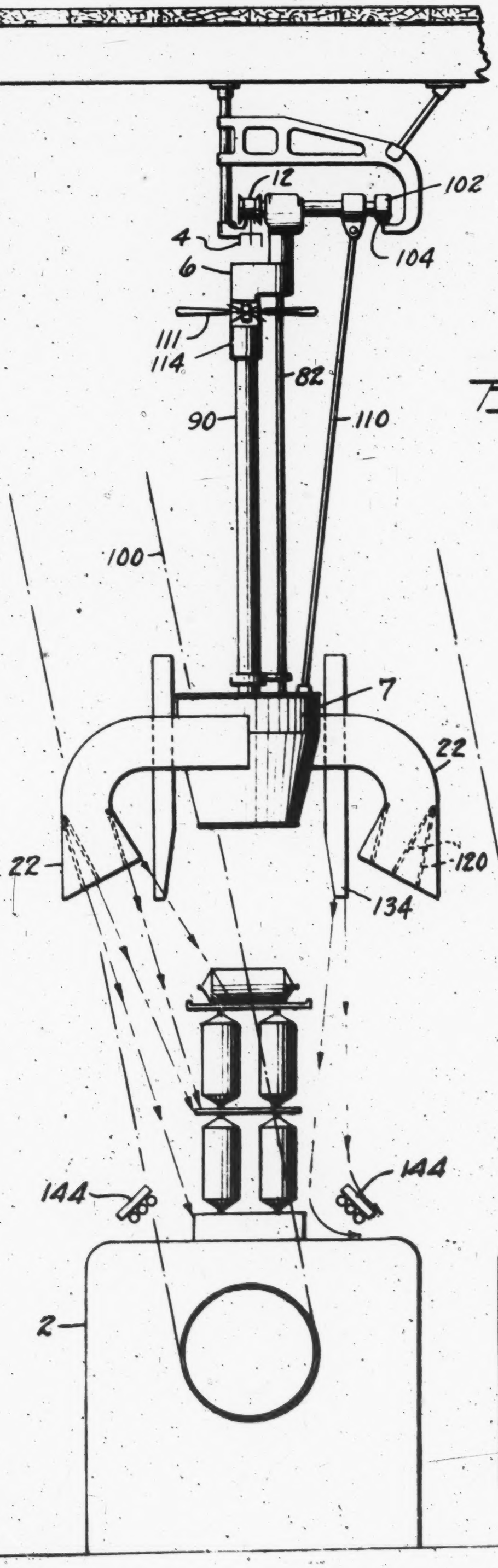
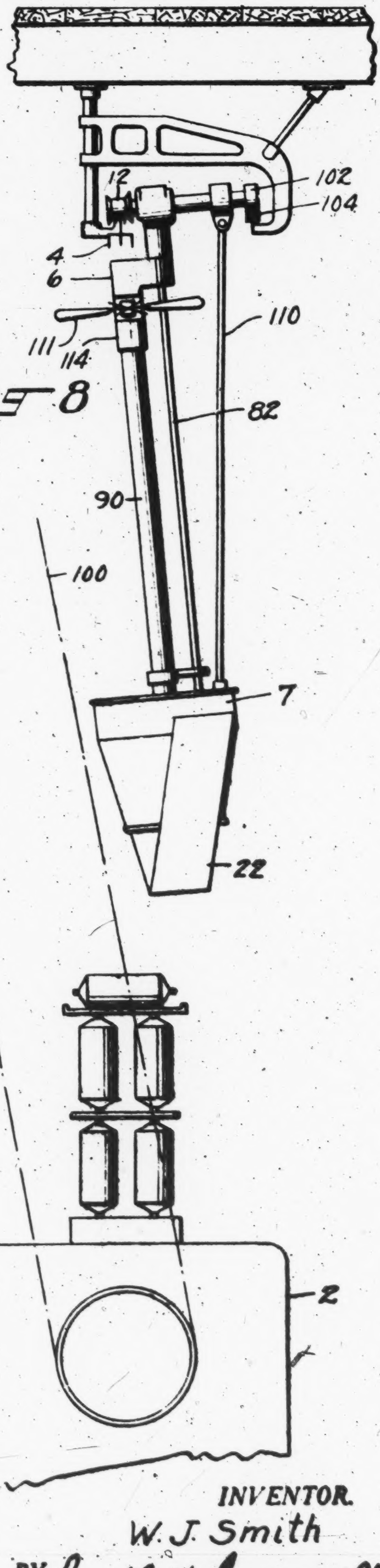


Fig 8



INVENTOR.
W. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

Aug. 1, 1933. W. J. SMITH 1,920,768

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

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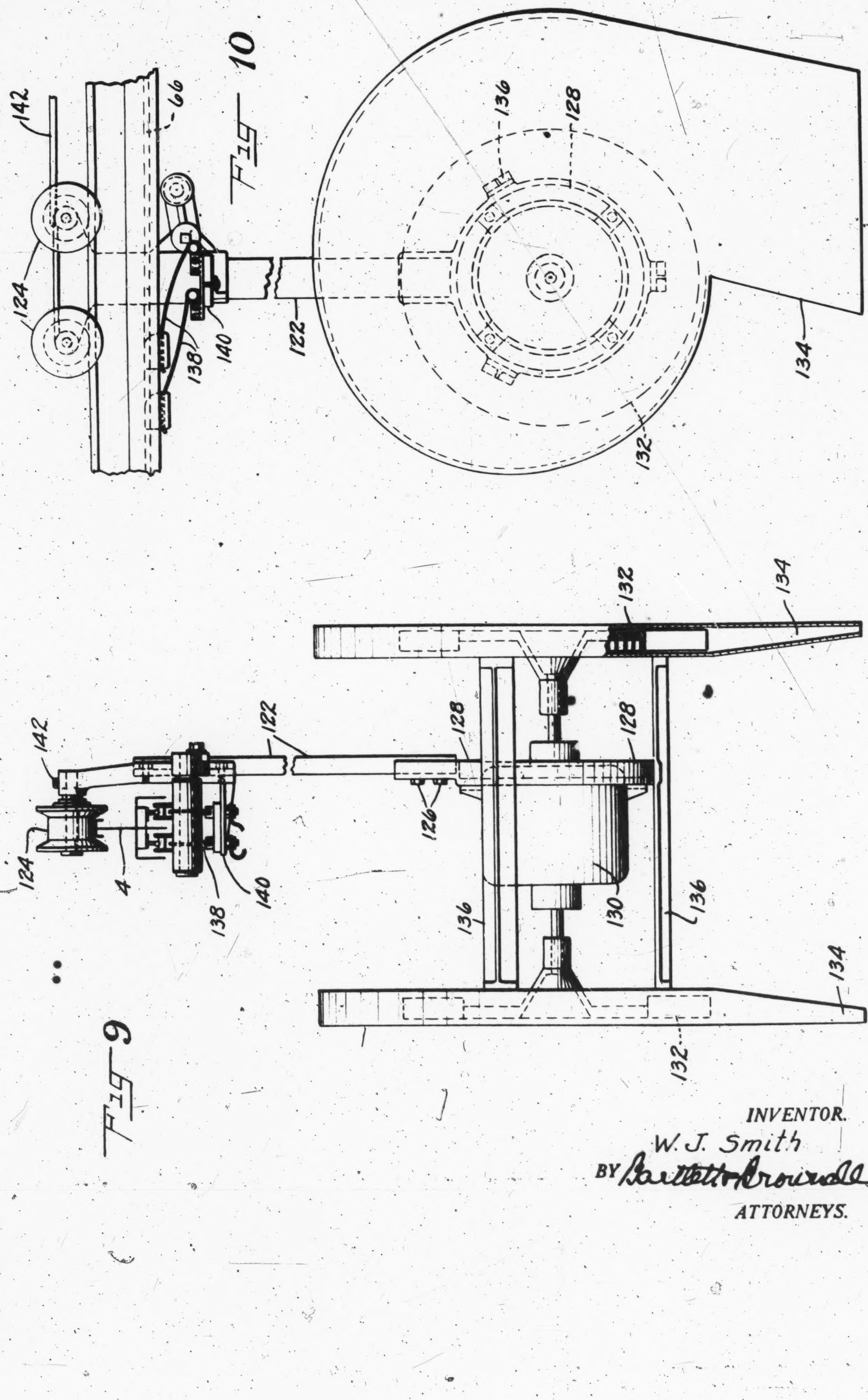


INVENTOR.
W. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

Patented July 14, 1936 2,047,558

UNITED STATES PATENT OFFICE

2,047,558

CLEANING APPARATUS FOR MACHINERY

William B. Hodge, Charlotte, N. C., assignor to Parks-Cramer Company, Fitchburg, Mass., a corporation of Massachusetts

Application July 21, 1933, Serial No. 681,515

7 Claims. (Cl. 15—20)

This invention relates to an improved fan box for distributing air outlet for the type of travelling cleaner in application Serial Number 538,588, filed May 19, 1931 of which I am a joint inventor, and comprises certain changes in form and arrangement from the structure shown in said application, whereby the downwardly swirling drafts of air delivered onto the machine to be cleaned are adjustable as to direction.

It is an object of this invention to provide a type of hood or fan box which is particularly adapted to the cleaning and removing of lint and dirt from textile machines and more especially spinning frames.

The complete mechanism is supported in any suitable manner above the machine to be cleaned and comprises a motor with a vertical shaft driving a fan at the top end of the shaft to project downwardly a swirling draft of air and at the bottom end of the shaft a geared mechanism is provided whereby the motor member travels along the supporting track on a wheeled mechanism, all of which is fully shown and described in said pending application above referred to.

It has been found in practical application of the mechanism in the said above referred to application that the shelves or tables supporting the roving bobbins, commonly designated on spinning frames as creel boards, vary greatly in width. It is important that the draft or air produced by the fan be directed with considerable nicety so as to strike the several parts of the creel boards, and other portions of the spinning frames requiring cleaning, in specific places. On this account, variation in the widths of creel boards require variation in distributing hood construction. That is, the outlets for directing the air are more efficient if made at a specific angle for each machine, depending upon the width of its creel board. Therefore, by providing adjustable means for guiding the downwardly swirling blasts of air produced by the fan within the box, it is possible to provide a mechanism which can be easily adjusted for various widths of creel boards without the necessity of specifically manufacturing a particular box to surround the fan for each particular machine.

To simplify the construction of such outlet boxes, I have devised an adjustable sleeve or cuff, attached at the lower end of the diffuser outlet and preferably made in two sections, whereby the downwardly swirling drafts of air can be directed either inwardly or outwardly, as may be found desirable, by the simple adjustment of a set screw. It is, of course, evident that there could be one adjustable sleeve on each side of the track instead of a plurality as shown.

Some of the objects of the invention having been stated, the details of the mechanism will more fully appear in the detailed description hereinafter following when taken in connection with the accompanying drawings, in which—

Figure 1 is an end view of my cleaning mechanism applied to a spinning frame and showing the end of the spinning frame in elevation with a portion broken away;

Figure 2 is a transverse vertical sectional view taken through the fan box in Figure 1 and showing the adjustable sleeve;

Figure 3 is a side elevation of the fan box showing the fan box in section and the outlet in elevation with a portion of the outlet broken away;

Figure 4 is an isometric view of a portion of the outlet which is usually made integral with the fan box;

Figure 5 is an isometric view of one of the sleeves adjustably mounted on the outlets.

Referring more particularly to the drawings, 1 represents the end of a spinning frame, 2 the creel board support, 3 and 4 the creel boards, 5 a roll stand, 6 the spinning bobbins, 7 the roving bobbins, 8 the support for the track carrying the traveling cleaner as fully described in said application, 9 the gear box, also fully described in said application, 10 the electric motor, 11 the box surrounding the fan having a pair of openings, 12 and 13 in the bottom thereof which are covered by the discharge outlets 14 and 15. A fan 16 is secured to the upper end of the shaft of the motor for drawing air into the opening 17 in the top of the box 11, and directing it downwardly through the openings 12 and 13.

The outlets 14 and 15 have a vertically disposed slot 18 therein and on the lower edge of the sidewall of the outlets next to the motor, hinges 19, 20, 21, and 22 are provided which hingedly connect the sleeves 23, 24, 25, and 26 to the outlets 14 and 15. The outer sidewalls of sleeves 23 to 26 inclusive are adapted to telescopically fit over the outer sidewalls of the outlets 14 and 15 and each of these sleeves has a slot 27 therein penetrated by a bolt 28 rigidly secured in the sidewall of the outlet and having any suitable means for adjusting the same such as wing nut 29. It is readily apparent that the angularity of the sleeves 23 to 26 inclusive may be adjusted to suit particular conditions on any particular machine. In Figure 1 it is seen that some of the outlets can be adjusted to direct the

swirling blasts of air downwardly onto the creel boards 3 and 4 and the roving bobbins 7 and the rovings passing therefrom, whereas other sleeves may be adjusted to direct the swirling blasts of air downwardly onto the roll stands, drawing rolls, thread board, spinning bobbins, spinning rails, ring rails and other parts of the machine.

The gear housing 9 is supported by wheels 30 and 31 on tracks 32 and 33 which is fully explained in said application Serial Number 538,588.

The draft of air produced by the type of fan used is swirling in its effect, and there is a decided tendency for the downwardly discharging air to sweep across the creel board, producing an air draft at an acute angle to the direction of the track.

Let us suppose that the mechanism as seen in Figures 1 and 2 is traveling towards the observer. It is there seen that the front sleeve 23 is directed inwardly and the other front sleeve 26 is directed outwardly or to the right in Figures 1 and 2, and the rear sleeve 24 is directed outwardly and other rear sleeve 25 is directed inwardly or to the left in Figures 1 and 2, all of the above directions being with respect to the motor housing. With this arrangement sleeve 26 directs a stream of swirling air downwardly and outwardly on the outer and lower portion of the machine, striking the portions of the machine at an acute angle and sweeping the lint particles therefrom. This forward directing of the stream of air issuing from sleeve 26 is obtained by means of the direction of rotation of the fan, whose nearest blades in Figure 3 are moving to the right and the sleeves being relatively short, do not destroy the swirling effect produced by the disk fan and therefore the blasts of air have an axis which is inclined forwardly or to the right in Figure 3.

At the same time, and for the above described reasons, the sleeve 25, which is directed inwardly, causes a downwardly and rearwardly moving swirling stream of air to be directed inwardly to strike the creel boards at an acute angle and sweep the lint therefrom.

Also the sleeve 23 directs a downwardly swirling and forwardly directed stream of air onto and across the creel boards, while the outwardly directed sleeve 24 directs a rearwardly and downwardly and outwardly directed swirling stream of air onto the lower and outer portions of the machine.

By having the front pairs of sleeves directed laterally of the machine in the same direction, they do not interfere with each other, and the same is true with respect to the rear sleeves. When the direction of travel of the mechanism is reversed, the forward sleeves, of course, become the rearward sleeves, but the functions performed are the same as above described.

If it is desired to vary the amount of and volume of air which is directed downwardly through the sleeves, this may be done by the provision of a vane 35, having a small rod 36 secured to the lower edge thereof and having this rod rotatably mounted in the sidewalls of the outlets 14 and 15, these vanes being adjustable by means of a threaded bolt 37 being secured to the vanes and penetrating an arcuate slot 39 in the outer sidewall of the housings and having a wing nut 37 thereon, so the vanes can be adjusted to deflect more of the swirling air through one of the openings than the other.

In the drawings and specification there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:

1. Means for removing lint and other foreign particles from machinery comprising a driven fan for producing blasts of air, a housing surrounding said fan and having an upper open end and having a bottom provided with two transversely spaced openings, a downwardly extending fixed outlet member surrounding each of said openings and secured to said bottom, a pair of movable outlet members adjustably secured to each fixed outlet member, means for adjusting the angularity of each movable outlet member with relation to the fixed outlet member, and a movable vane in each fixed outlet member for proportioning the volumes of air passing through the movable outlet members, the said openings or apertures being far enough from each other to permit the air blasts issuing therethrough to strike different portions of the machinery.

2. Means for removing lint and other particles from machinery comprising a driven fan having a vertical axis and having a housing surrounding said fan and having an upper open end, and also having a bottom provided with two transversely spaced openings, a fixed outlet member surrounding each of said openings and secured to said bottom, a pair of adjustable outlet members pivotally secured to each fixed outlet member, means for adjusting the angularity of each adjustable outlet member with relation to the fixed outlet member, a vane disposed within each fixed outlet member and means for adjusting the position of the vane to proportion the volumes of air passing through said adjustable outlet members, the said openings being far enough from each other to permit the air blasts issuing therethrough to strike different portions of the machinery.

3. Apparatus for cleaning machines comprising a driven fan for producing air blasts, and open-topped housing surrounding said fan and provided with a plurality of transversely spaced openings in the base thereof, a fixed outlet member surrounding each opening, a pair of outlet members adjustably secured to the lower end of each fixed outlet member whereby the air blasts from each fixed outlet can be divided and separately directed onto different portions of the machine, a vane disposed within each fixed outlet member and means for adjusting the position of the vane to proportion the volumes of air passing through said adjustable outlet members, the said openings being far enough from each other to permit the air blasts issuing therethrough to strike different portions of the machinery.

4. In combination, a driven disk fan, a housing surrounding said fan and having a pair of transversely disposed spaced openings in the same for receiving the blasts from the discharge side of the fan, a duct surrounding each opening, a pair of spouts adjustably secured to the lower end of each duct for separating the blasts of air issuing from said fan through each of the ducts and directing said divided blasts, a vane disposed within each fixed outlet member and means for adjusting the position of the vane to proportion the volumes of air passing through said adjustable outlet members, the said openings being far enough from each other to permit the air blasts issuing therethrough to strike different portions of the machinery.

5. Means for removing lint from machinery

comprising a traveler mounted for travel longitudinally above the machinery and having a driven disk fan mounted on a vertical axis, a housing surrounding said fan and having an open upper end and having a bottom provided with a pair of transversely spaced apertures through which the blasts created by the fan are expelled downwardly, an outlet surrounding each of said apertures, an adjustable vane mounted in each of said outlets for dividing the air blasts discharged therefrom, a pair of spouts adjustably secured to the lower end of each of said outlets for directing the air blasts onto the machinery, and means for adjusting the spouts so that the blasts of air can be directed onto the desired portions of the machinery over which the fan travels, the said apertures being far enough from each other to permit the air blasts issuing therethrough to strike different portions of the machinery.

6. Apparatus for removing lint and other particles from textile machinery comprising a trackway disposed longitudinally above the machinery, a traveler mounted for travel on said trackway and having a driven disk fan mounted on a vertical axis on said traveler, a housing surrounding said fan and having a bottom portion, a pair of spouts secured to said bottom on each side of the trackway and having their upper ends communicating with the interior of said housing, one of each pair of spouts being inclined from the vertical transversely of the machine in one direction and the other one of the other pair of spouts being inclined from the vertical transversely of the machine in the other direction, whereby the front spouts will direct a pair of blasts across the machine to sweep the parts thereof in one direction while the other spouts will direct another pair of blasts across the parts of the machine in the other direction to subject the machine to oppositely directed blasts as the traveler travels along the machine.

7. Apparatus for removing lint and other particles from textile machinery comprising a trackway disposed longitudinally above the machinery, a traveller mounted for travel on said trackway and having a driven disk fan mounted on a vertical axis on said traveller, a housing surrounding said fan and having a bottom portion, front and rear spouts secured to said bottom on each side of the trackway and having their upper ends communicating with the interior of said housing, both of the front spouts being inclined from the vertical transversely of the machine in one direction and the rear spouts being inclined from the vertical transversely of the machine in the other direction, whereby the front spouts will direct a pair of blasts across the machine to sweep the parts thereof in one direction while the other spouts will direct another pair of blasts across the parts of the machine in the other direction to subject the machine to oppositely directed blasts as the traveller travels along the machine.

WILLIAM B. HODGE.

Note

Pages 111a - 119a are on card 5.
(Even numbered pages are blank)

Patented Aug. 1, 1933

1,920,768

UNITED STATES PATENT OFFICE

1,920,768

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

William J. Smith, Brockton, Mass., assignor to Firth-Smith Company, Boston, Mass., a Corporation of Massachusetts

Application December 31, 1928
Serial No. 329,421

17 Claims. (Cl. 15—20)

My invention relates to apparatus for operating upon spinning frames and other machines, and has special reference to apparatus for removing dust and other fine particles from the machines and maintaining them substantially free of such deposits.

The object of the invention is to generally improve the construction and mode of operation of machines of this character as will hereinafter appear.

With this object in view, the features of the invention consist in certain constructions, arrangements and combinations of parts hereinafter described and claimed, the advantages of which will be obvious to those skilled in the art.

The several features of the invention will be clearly understood from the following description and accompanying drawings, in which:

Figure 1 is a side view, partly in section and partly broken away to save space, of a portion of an apparatus embodying the features of the invention in their preferred form;

Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view, on an enlarged scale, taken on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view of a portion of one of the blower nozzles forming a component part of the apparatus;

Fig. 5 is a sectional view on the line 5—5 of Fig. 4;

Fig. 6 is a side view, partly diagrammatical, of a portion of the apparatus shown operating on a spinning frame;

Fig. 7 is a front view of the same;

Fig. 8 is a view corresponding to Fig. 7, but showing certain parts in a different position;

Fig. 9 is a front view, partly in section, of an air impelling device which may form a component part of the apparatus; and

Fig. 10 is a side view of the same.

The apparatus illustrated in the drawings is of the type of the one described and claimed in the patent to Joseph J. Smith, "Apparatus for operating on spinning frames and other machines", No. 1,857,410, May 10, 1932. This apparatus is particularly adapted for use in operating upon spinning frames, one of which is indicated at 2 in Figs. 6, 7 and 8, which are usually arranged in parallel rows with the frames of each row arranged end to end. The apparatus is provided with an endless track 4 which extends centrally over the machines of each row. The apparatus is further provided with a carriage 6 and an air propelling device in the form of a blower 7 mounted thereon, and the carriage is propelled along the track by power operated means so as to cause the blower to operate successively upon the machines of each row and upon the several rows of machines successively, so that each machine is operated upon uniformly at predetermined intervals. The carriage 6 is suspended from flanged sheaves or wheels 10 and 12 mounted on the track, and the air impelling means is provided with a fan 14 and an electric motor 16 having its shaft 18 arranged vertically. The fan 14 and motor 16 are enclosed by a sheet metal cylindrical casing 20 which may have its lower end closed and is provided with laterally extending air directing arms 22 having discharge orifices suitably arranged to direct currents of air downwardly and inwardly over the sides of the spinning frames or other machines. The motor 16 through suitable connections drives the carriage wheel 10 so as to propel the carriage along the track, and also drives the fan 14. The driving connection between the wheel 10 and the motor shaft comprises a horizontal shaft 24 that carries said wheel, and extends through and is journaled in suitable ball-bearings in the bifurcated upper end of a vertically arranged post or hanger 26 forming a part of the carriage 6. A vertical shaft 28 extends through the post or hanger 26 and has its upper end operatively connected with the wheel shaft 24 through bevel gears 30. The lower end of the vertical shaft 28 carries a spur gear 34 which is operatively engaged by a pinion 36 secured on the upper end of a vertical shaft 38 that extends through a depending post or hanger 40 cast integral with the post or hanger 26. The vertical shaft 38 is in axial alinement with the motor shaft 18 and is detachably connected therewith by means of a flexible coupling 42. A spider 44 supports the electric motor 16, fan 14 and fan casing. The spider is provided with an outer annulus or rim 48 which is connected with the hub of the spider by a series of four radial arms 50, and is further provided with depending bracket arms 52 that are connected at their lower end by an annulus 53 which supports lugs 54 projecting from the motor casing.

The upper annulus 48 of the spider 44 supports the nozzle casing 20. To provide for this, an annular member 55 is secured to the inside of the upper end of the cylindrical central portion of the casing and is provided with a horizontal inwardly directed flange 57 that extends over the outer portion of the annulus 48. The

flange 57 and annulus 48 are provided with opposed annular grooves forming a raceway for ball-bearings 59 so that the blower casing may be turned from its normal widthwise position to endwise position to permit it to clear a belt or other obstruction in its path as hereinafter described.

The fan 14 is provided with a hub 60 which is secured on the upper end of the motor shaft 18, and is further provided with suitably formed blades 62 that are connected at their lower ends to an upwardly and downwardly flaring web 64 projecting from the fan hub 60.

To energize the electric motor 18, trolley wires 66 are mounted at opposite sides of the track 4. These trolley wires are engaged by trolleys 68 (indicated by broken lines in Fig. 3) which are suitably mounted on a bracket plate 74 projecting from the blower carriage, the trolley being electrically connected with the motor 18.

The means for turning the blower casing 20 to permit it to clear an obstruction in its path comprises gear teeth formed on the annular member 55 which are engaged by a gear 80 secured on the lower end of a vertical shaft 82. A gear 84 is loosely mounted on the upper end portion of the shaft 82 and is driven by a pinion 86 on the shaft 28. The gear 84 is adapted to be clutched to the shaft so as to cause the shaft to turn the gear 80 and thus turn the blower casing 20, by means of a suitable clutch 85 having a control member 87. An abutment plate 88 is secured on the track 4 in the path of the free end of the control member 87 and in proper position with relation to the belt or other obstruction in the path of the blower, so that as the blower approaches the obstruction the control member 87 by engagement with the abutment plate is caused to swing in a direction to throw in the clutch so as to establish driving connection between the gear 84 and the shaft 82. When the shaft 82 has operated to turn the blower casing ninety degrees in one direction so as to change the position of the casing from widthwise to endwise of the row of machines, the clutch is automatically thrown out. As the blower passes the belt or other obstruction the end of the control member 87 engages a second abutment plate which causes the member to be swung in a direction to again throw in the clutch so as to further rotate the blower casing another ninety degrees to return it to its normal widthwise position, whereupon the clutch is again thrown out and the nozzle casing is held in this position until it approaches another obstruction in its path.

Except as hereinafter described the parts above referred to may be and preferably are the same as the corresponding parts of the apparatus forming the subject matter of said patent to Joseph J. Smith, No. 1,857,410.

In apparatus of the character of the one above referred to, it is desirable that the endless track shall be positioned as close to the ceiling of the room in which the machines to be operated upon are located as possible, but it is, of course, essential that the blower shall be spaced the proper distance above the machines to obtain the best results, the proper spacing of the blower from the machines varying under different conditions. In accordance with the present invention, the track may be located at any desired height, while still maintaining the blower in proper relation to the machines. To provide for this, an extension 90 is interposed between the supporting hanger or post 40 and the spider 44. This hanger is in the form of a tube and may have its upper end detachably secured to the lower end of the post 40 and its lower end detachably secured in the hub of the spider 44 by means of a bolt 92. Also, the upper portion of the shaft 38 is made in two sections that are detachably connected by a flexible coupling 94, the upper section being journaled in suitable bearings in the post 40 and the upper and lower ends of the lower section being journaled in bearings in the upper and lower ends of the extension 90. The shaft 82 has its upper portion journaled in a bearing in a bracket arm 96 and its lower portion extending through and journaled in a bracket arm 98 detachably secured to the extension 90, the shaft 82 being removable. With this construction, it will be apparent that by employing a proper length extension 90, shaft 38 and shaft 82, the blower may be positioned as desired with relation to the machines, and the track positioned at any desired height.

In some cases it has been found that a belt or other obstruction in the normal path of the blower is so located that the blower is unable to clear the obstruction even when it is turned so as to travel endwise as above described. Such a situation is indicated in Fig. 7 in which it will be noted that the belt 100 is so located that even though the blower were turned to its endwise position the horizontal central portion of the blower casing would strike the belt. In accordance with the present invention, however, means is provided whereby the blower may be swung laterally about an axis corresponding to the line of contact of the carriage wheels with the track so as to move the blower casing a sufficient distance to clear such obstruction, as indicated in Fig. 8. To provide for this, the end of the driving carriage wheel shaft 24 at the opposite side of the hanger 26 from the driving wheel, is extended and a wheel or roller 102 is secured on its outer end. This roller 102 is adapted to ride on an auxiliary track 104 which is raised above the main track 4 and has inclined end portions 106. This auxiliary track is so located with relation to an obstruction in the path of the blower, that as the blower approaches the obstruction and as it is turned ninety degrees as above described, the roller 102 rides up on the auxiliary track 104 and thus swings the blower laterally a sufficient distance so that its central portion may clear the obstruction. After the blower passes the obstruction the roller 102 rides off of the track to permit the blower to return to normal vertical position by gravity. It will be apparent that any number of auxiliary tracks 104 may be employed depending upon the number of belts or other obstructions in the path of the blower.

The projecting end portion of the shaft 24 which carries the roller 102 extends through and is journaled in a suitable supporting bearing 108 which is secured by a tie-rod 110 having one end connected with the bearing and its other end secured to the spider 44, this construction permitting the tilting movement to be accomplished without placing undue strain upon the apparatus. Such tilting of the blower to permit the central portion of its casing to clear an obstruction in its path, in many instances does away with the necessity of providing the track with an offset portion.

The illustrated apparatus is further provided with a fan 111 which is secured on the upper end

of a vertical shaft 112 that extends through and is journaled in the ends of the arms of a bifurcated bracket 114 which is secured to and interposed between the post or hanger 40 and the upper end of the extension 90, the upper end of the extension being detachably secured to the bracket by means of a bolt 116. This fan is driven by means of a belt 118 which passes over a pulley on the fan shaft 112 and a pulley carried by the lower section of the shaft 38, the upper face of the latter pulley constituting one member of the flexible coupling 94. This fan is located in proximity to the underside of the track 4 and is spaced a distance in advance of the blower.

With this construction, during the travel of the apparatus the fan 111 directs air upwardly against the underside of the track and over the trolley wires and toward the ceiling, and because of the movement of the apparatus and also because of the suction created on the top side of the blower casing, the air thus directed upwardly tends to take a more or less of a return bent course and be drawn down through the blower and towards the work. This fan, therefore, serves to maintain the track, trolley wires and ceiling free of dust and other fine particles and, also, as the humidifiers in a spinning room are located near the top of the room, the air thus propelled by the fan will be of a high degree of humidity and as it passes down through the blower it will increase the humidity of the air which is directed by the blower against the work, where the humidity is most needed.

In the illustrated apparatus, each of the air directing arms 22 has two sets of baffles 120 which have their upper ends pivotally mounted in the ends of the arms, and the two sets are arranged one behind the other (Figs. 4, 5 and 7). One set may consist of two baffles, while the other set may consist of one as shown. With this arrangement of baffles by proper adjustment thereof, two more or less contiguous streams of air may be directed from each arm as indicated in Fig. 7. The rear baffle cooperates with the inner wall of the arm to direct a stream of air downwardly and inwardly against the upper spindles or spools of the spinning frame and the forward baffles to direct a stream of air downwardly and inwardly over the other spindles or spools. It will be apparent that with the use of these baffles more definite and positive results may be obtained than where the air is directed from each nozzle in a single stream.

The air impelling device illustrated in Figs. 6, 7, 9 and 10 of the drawings is particularly adapted for use in connection with the apparatus above described. The device comprises a carriage which is made up of a depending bar 122 having wheels 124 on its upper end adapted to ride on the track 4. To the lower end of the hanger bar is secured by bolts 126, an annular frame 128 for supporting an electric motor 130 with its shaft arranged transversely of the track. A fan 132 is secured on each end of the motor shaft, and is enclosed by an air directing casing having a downwardly and rearwardly extending discharge nozzle 134. The two fan casings are secured on the ends of horizontal bars 136 which are secured to the annular frame 128. The motor is energized from the trolley wires 66 through trolleys 138 which are mounted on a bracket 140 secured to the depending bar 122. The device is adapted to be drawn along by means of a flexible rod 142 having one end secured to the upper end of the depending bar 122 and its other end secured to the blower carriage 6.

The two fan casings and their nozzles 134 are so formed as to direct thin and wide streams of air downwardly and slightly rearwardly in parallel relation, the streams traveling edgewise during the travel of the device.

This auxiliary device is particularly adapted for use on spinning frames where the work is relatively coarse and dusty. With such use of the device the two thin streams of air may be directed downwardly back of the clearer boards 144 (Figs. 6 and 7) of the spinning frame, so as to maintain the draw rolls, weight hooks and adjacent parts of the spinning frame free of accumulations of dust deposits, thus permitting the streams of air from the main blower to be directed more entirely against the work. By directing the thin wide streams slightly rearwardly as shown, and due to the travel of the device, it has been found that the accumulations are blown more or less rearwardly and fall or are blown to the floor.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. Apparatus of the class described having in combination, an overhead track, an air impelling device suspended from the track and adapted to travel along the track, and means acting automatically at a predetermined point in its travel to move said device laterally with relation to the track and to its normal path of travel about a pivotal point arranged adjacent the track, maintaining it thus moved for a predetermined interval of travel so as to permit it to clear an obstruction in its path and then returning it to its initial position to cause it to resume its normal path of travel.

2. Apparatus of the class described having, in combination, an overhead track, an air impelling device mounted to travel along the track, and means acting automatically at a predetermined point in the travel of the air impelling device to move said device laterally with relation to the track and to its normal path of travel, maintaining it thus moved for a predetermined interval of travel so as to permit it to clear an obstruction in its path and then returning it to its initial position to cause it to resume its normal path of travel.

3. Apparatus of the class described having, in combination, an overhead track, an air impelling device suspended from the track and adapted to travel along the track, and means acting automatically at a predetermined point in its travel to move said device laterally with relation to the track and to its normal path of travel, maintaining it thus moved for a predetermined interval of travel about a point spaced a distance above the device so as to permit it to clear an obstruction in its path and then returning it to its initial position to cause it to resume its normal path of travel.

4. Apparatus of the class described having, in combination, an overhead track, an air impelling device mounted to travel along the track, means for turning said device about a substantially vertical axis at a predetermined point in its travel, and means acting simultaneously to

move said device laterally with relation to the track.

5. Apparatus of the class described having, in combination, an overhead track, an air impelling device, means for suspending said device from the track and propelling it along the track, comprising a driven shaft and a wheel carried by the shaft mounted on the track, and means for moving said device laterally with relation to said track, maintaining it thus moved for a predetermined interval of travel, and then returning it to its initial position comprising an auxiliary track and a wheel carried by said shaft adapted to ride upon said auxiliary track.

6. Apparatus of the class described having, in combination, an overhead track, an air impelling device, means for suspending said device from the track and propelling it along the track, and means for moving said device laterally with relation to said track, maintaining it thus moved for a predetermined interval of travel thereof and then returning it to its initial position, comprising an auxiliary track, and a projection carried by said device and arranged to ride upon said auxiliary track.

7. Apparatus for operating on spinning frames or other machines arranged in a room having, in combination, a track mounted at the upper part of said room, a carriage mounted to travel along the track, an air impelling device mounted on the carriage a distance below the track and in proximity to said machines, and an air impelling means mounted on the carriage in proximity to the underside of the track for directing air upwardly.

8. Apparatus for operating on spinning frames and other machines arranged in a room having, in combination, a track mounted in the upper part of said room, a carriage mounted to travel along the track, a blower mounted on the carriage a distance below the track and in proximity to said machines for directing air downwardly over the machines, and an air impelling device mounted on the carriage in proximity to the underside of the track for directing air upwardly in advance of the downwardly directed air.

9. Apparatus for operating on spinning frames and other machines arranged in a room having, in combination, a track mounted in the upper part of said room, a carriage mounted to travel along the track, an air impelling device mounted on the carriage a distance below the track and in proximity to said machines, a second air impelling device mounted on the carriage in proximity to the underside of the track for directing air upwardly, an electric motor mounted on the carriage, and driving connections between the shaft of the motor and both of said air impelling means.

10. Apparatus for operating on spinning frames and other machines arranged in a room having, in combination, a track mounted in the upper part of said room, a carriage mounted to travel along the track, air impelling means mounted on the carriage a distance below the track and in proximity to said machines, a second air propelling device mounted on the carriage in proximity to the underside of the track for directing air upwardly, an electric motor mounted on the carriage, connections between the shaft of the motor and the first mentioned air impelling device for driving said device, connections with said motor shaft for driving the carriage along the track comprising a shaft arranged vertically having its lower end connected with said motor shaft, a carriage wheel mounted on the track, and connections between the upper end of said vertical shaft and said carriage wheel, and connection between said vertical shaft and said second mentioned air propelling device for driving said device.

11. Apparatus for operating on spinning frames and other machines arranged in a row having, in combination, a blower mounted to travel over the row of machines, and air directing means associated with the blower having laterally arranged discharge orifices for directing air downwardly and inwardly over the sides of the machines, and two sets of baffles in each of said discharge orifices arranged one behind the other, adapted to be adjusted to cause the air directed by one set to impinge against the sides of the machines at a different angle than the air directed by the other set.

12. Apparatus for operating on spinning frames and other machines arranged in a room having, in combination, a track arranged in the upper part of the room, a carriage mounted to travel along the track, an air impelling device, means for supporting said air impelling device from said carriage comprising a support on which the air impelling device is mounted, and a tubular hanger having its upper end detachably secured to said carriage and its lower end detachably secured to said air impelling device, an electric motor mounted on said support, and connections with said motor shaft for propelling the carriage along the track comprising a vertical shaft extending through said tubular hanger, detachable connection between the lower end of said shaft and said motor shaft, a carriage wheel mounted to ride on the track, and a detachable connection between the upper end of said vertical shaft and said carriage wheel for driving said wheel.

13. Apparatus of the class described having in combination, an overhead track, a carriage mounted to travel along the track, air impelling means mounted on the carriage, an electric motor mounted on the carriage, connections with the shaft of the motor for driving said air impelling means and for propelling the carriage along the track, a second carriage mounted on the track a distance behind the first mentioned carriage, connection between the two carriages for causing the second mentioned carriage to be drawn along with the first mentioned carriage, an electric motor mounted on the second mentioned carriage, and connection between the shaft of the second mentioned motor and the second mentioned air impelling device for operating said device.

14. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track having a depending hanger, an electric motor mounted on the lower end portion of said hanger having its shaft horizontally arranged transversely of the track, air impelling devices respectively mounted on the ends of said shaft, and a casing enclosing each of said devices having an orifice for directing the air impelled thereby downwardly.

15. Apparatus of the class described having, in combination, an overhead track, an air impelling device suspended from the track and adapted to travel along the track, and means acting automatically at a predetermined point

in its travel for swinging the device laterally on the track out of its normal path of travel so as to permit it to clear an obstacle in its path.

16. Apparatus of the class described having, in combination, an overhead track, an air impelling device mounted to travel along the track, means for turning said device about a substantially vertical axis at a predetermined point in its travel, and means acting simultaneously to move said device laterally with relation to the track and to its normal path of travel and after a predetermined interval of travel in said lateral position returning it to its normal path of travel.

17. In an apparatus for operating upon a row of spinning frames or other machines, having an overhead track, and an air impelling device mounted on the track to travel over the machines in the row, the improvement which consists in said air impelling device having means for directing air downwardly in two streams over the sides of the machines, the streams being relatively thin in a direction transversely of the track and wide longitudinally of the track.

WILLIAM J. SMITH.

PLAINTIFF'S EXHIBIT 31.

Stipulation.

IT IS HEREBY STIPULATED AND AGREED by and between counsel for the parties hereto:

(1) That the defendant, The American Monorail Company has manufactured, sold and installed in one or more spinning rooms a Traveling Cleaner substantially as shown in the advertisement of The American MonoRail Company appearing on page 142 of the November, 1955 issue of the magazine "Textile Industries," a copy of which advertisement is attached hereto and marked Exhibit 19.

(2) That the defendant The American MonoRail Company has manufactured and sold a Traveling Cleaner substantially as shown in the photographs attached hereto and marked Exhibit 20, and installed such Traveling Cleaner in the spinning room of the Abernathy Division of Trenton Cotton Mills, Statesville, North Carolina on or about September, 1955.

(3) That Patent No. 2,524,797 is owned by plaintiff.

JOS. W. GRIER JR.,
Attorneys for Plaintiff,

B. D. WATTS,
Attorneys for Defendant.

Dated:
Feb. 9, 1956

PLAINTIFF'S EXHIBIT 32.

Stipulation.

IT IS HEREBY AGREED AND STIPULATED by and between counsel for the respective parties that the photographs marked as Plaintiff's Exhibits 10 and 11 in the above entitled case show the traveling cleaner made by Defendant, The American Monorail Company of Cleveland, Ohio, and installed by it during the week of December 6, 1954 in the spinning room of the Lakedale Plant of Burlington Mills Corporation at Fayetteville, North Carolina, where the employees of that Company operated and tested it as a cleaner for spinning frames in that room. On January 21, 1955 the trial operation was reported to be completed and the cleaner was removed from the Lakedale Plant on or about February 15, 1955.

Boston, Mass.
August 31, 1955

CEDRIC W. PORTER,
Attorney for Plaintiff.

Cleveland, Ohio
Sept. 2, 1955

B. D. WATTS,
Attorney for Defendant.

PLAINTIFF'S EXHIBIT 33.

Defendant's Interrogatories.

NOW COMES the defendant, under the provisions of Rule 33 of the Rules of Civil Procedure, by its counsel, and propounds the following interrogatories to be answered by an officer of plaintiff having knowledge of the facts:

Interrogatory No. A. Will plaintiff at the trial of this case assert that Claim 6 of the patent in suit is infringed by the apparatus shown in the photographs marked

"Plaintiff's Exhibits 10 and 11" attached to the stipulation executed by counsel for plaintiff on August 31, 1955, and by counsel for defendant on September 2, 1955?

Defendant attaches hereto three drawings marked Interrogatory Exhibit No. 1—defendant's drawing No. Y-2588-14SD1; Interrogatory Exhibit No. 2—defendant's drawing No. Y-2588-15SD1; and Interrogatory Exhibit No. 3—defendant's drawing No. Y-2581-162SD-2, and represents that the device shown by each of these drawings has been built by defendant and has been sold or offered for sale by defendant prior to the date hereof. Defendant further represents that each of these three devices is to be supported by a track running over spinning machines to remove lint therefrom, is not self propelling along said track, and is to be moved along said track by being mechanically connected to any suitable self propelling apparatus for example, the traveling cleaner of Hodge patent No. 2,047,558.

Interrogatory No. B. Will plaintiff assert at the trial of this case that Claim 6 of the patent in suit is infringed by the device of Defendant's Interrogatory Exhibit No. 1?

Interrogatory No. C. Will plaintiff assert at the trial of this case that Claim 6 of the patent in suit is infringed by the device of Defendant's Interrogatory Exhibit No. 2?

Interrogatory No. D. Will plaintiff assert at the trial of this case that Claim 6 of the patent in suit is infringed by Defendant's Interrogatory Exhibit No. 3?

B. D. WATTS,
H. F. SCHNEIDER,
Attorneys for Defendant.

September 15, 1955

Note

Page 131a, 133a, 135a are on card 7.
(Even numbered pages are blank)

PLAINTIFF'S EXHIBIT 34.

Plaintiff's Answers To Defendant's Interrogatories.

Now Comes the Plaintiff and for its answers to defendant's Interrogatories states:

A. Answering Interrogatory No. A, the Plaintiff will assert at the trial of the above entitled case that claim 6 of the patent in suit is infringed by the apparatus shown in the photographs marked "Plaintiff's Exhibits 10 and 11" attached to the Stipulation executed by counsel for Plaintiff on August 31, 1955 and by counsel for Defendant on September 2, 1955, it being understood that the long cuffs or sleeves which hang downwardly from the cleaner enable currents of air to be directed against the machines and are of highly flexible material to enable the cuffs to yield upon impingement with an operator or other obstruction in their path of travel.

B, C and D. Answering Interrogatories Nos. B, C and D, the Plaintiff will assert at the trial of this case that claim 6 of the patent in suit is infringed by the devices of Defendant's Interrogatory Exhibits Nos. 1, 2 and 3 in view of the Defendant's representation in above specified interrogatories, it being understood that the long cuffs or sleeves identified as "Snout Extension Y-2581-157" and/or "Bag Y-2581-159" which hang downwardly from the cleaner enable currents of air to be directed against the machines and are of highly flexible material to enable the cuffs to yield upon impingement with an operator or other obstruction in their path of travel.

Parks-Cramer Company,
/s/ Maynard Ford,
Treasurer and General Manager.

September 26, 1955

(Verification omitted.)

Note

Pages 139a, 141a, 143a are on card 7.
(Even numbered pages are blank)

Patented Dec. 26, 1939 2,184,880

UNITED STATES PATENT OFFICE

2,184,880

TRAVELING CLEANER

William B. Hodge, Charlotte, N. C., assignor to Parks-Cramer Company, Fitchburg, Mass., a corporation of Massachusetts

Application May 23, 1938, Serial No. 209,546

11 Claims. (Cl. 15—30)

This invention relates to a cleaning apparatus for textile machinery, and more particularly to a cleaner mounted upon a trackway and adapted to travel successively over a plurality of rows of textile machinery. In my prior patent, No. 2,011,763 of August 20, 1935, a traveling cleaner is disclosed in which downwardly directed blasts of air are projected onto the upper portion of textile machines to clean and to remove lint and other foreign substances therefrom. It quite frequently happens that it is desired to eliminate this blast over one or more machines, especially when doffing takes place, or in case it is desired to work upon any particular machine. The reason for eliminating these blasts of air, over a particular machine while doffing is being effected, is quite obvious, since the yarn is not being processed at this time, and consequently no lint will be falling therefrom. Also the blasts of air are objectionable at this time, because it will interfere with the operation of doffing.

It is, therefore an object of this invention to provide a trackway mounted above a plurality of spaced textile machines over which blast producing means are adapted to travel for delivering blasts of air onto the machines, and means for automatically rendering the blast producing means inoperative while the fan passes over one or more of the machines, and means for automatically rendering the blast producing means operative after it has passed over a particular machine or machines.

It is another object of this invention to provide a fan mounted so as to successively traverse a plurality of spaced textile machines, and a motor for driving the fan, with a clutch between the motor and the fan and means for automatically disengaging the clutch as it passes over the machine and means for engaging the clutch after the fan has passed over a particular machine.

It is a further object of this invention to provide a cleaning apparatus of the class described comprising a pair of fans for directing blasts of air down onto spaced textile machines, with a motor for driving each fan, a third motor for driving a carriage and said fans over successive rows of spaced textile machines as shown in my co-pending application, Serial No. 59,614, filed January 17, 1936, of which this application is a continuation in part. In this present application means are provided for breaking the circuit to the fan motors while the carriage is traveling over a particular textile machine and other means for automatically cutting on the fan motors after the carriage has traveled over the particular machines.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings in which—

Figure 1 is an elevation of a plurality of textile machines, showing my invention applied thereto;

Figure 2 is a vertical sectional view taken along the line 2—2 in Figure 1;

Figure 3 is a vertical sectional view taken along the line 3—3 in Figure 2;

Figure 4 is a sectional detail view taken along the line 4—4 in Figure 3;

Figure 5 is a sectional view taken along the line 5—5 in Figure 2;

Figure 6 is an enlarged vertical sectional detail view taken along the line 6—6 in Figure 3;

Figure 6a is a sectional plan view taken along line 6a—6a in Figure 6;

Figure 7 is a sectional view through a trackway disposed above a textile machine and showing a slightly different form of the invention;

Figure 8 is a vertical sectional view taken along the line 8—8 in Figure 7;

Figure 9 is a sectional view taken along the line 9—9 in Figure 8;

Figure 10 is an exploded isometric view of the switch employed for controlling the current to the fan motors;

Figure 11 is a schematic electrical wiring diagram of the invention.

Referring more particularly to the drawings, the numerals 10 and 11 denote suitable textile machines such as spinning frames, spoolers, drawing frames, and the like, which are spaced apart from each other leaving a passageway 12 therebetween. These textile machines have mounted on the upper side thereof, suitable stands 14, the upper end of which support tracks 15 and 16. Mounted upon these tracks are wheels 17 and 18, respectively, of a wheeled traveler 19. The traveler 19 has a motor 20 carried thereby, which motor receives its electrical energy through cable 21, said cable communicating with contacts 22, 23 and 24. These contacts are adapted to slide along wires 25, 26 and 27, respectively, as the traveler moves longitudinally of the trackway.

The motor 20 has a motor shaft 30 extending upwardly therefrom, and the upper end of this shaft has secured therearound, a collar 31 by means of pin 32, said collar having a flange 31a. Disposed below this flanged collar is a clutch

shoe 33, which has secured to the lower side thereof by means of rivets 34, a clutch lining 35. A roller bearing 36 is disposed between the shoe 33 and the collar 31 so that when the lower face of clutch lining 35 is not contacted, the clutch shoe 33 and its associated parts can have free rotative movement around the collar 31. The upper side of the clutch shoe 33 has suitable plates 37 secured thereto by means of stud bolts 38, and secured to these plates are fan blades 39, which blades extend radially of the shaft 30.

The lower face of the clutch lining 35 is contacted by a clutch disk 45 which is also mounted around the lower portion of collar 31. This disk has secured to the lower side thereof, a small collar 46 by means of upwardly projecting pins 47, said collar 46 also being secured to the lower portion of flanged collar 31 by means of pins 48 which extend into slots 49 disposed in the lower edge of collar 31. The pins 48 prevent relative rotation between the collar 31 and members 45 and 46, but relative vertical movement can take place on account of the slots 49.

An inner race 50 is mounted around the shaft 30 directly below the collars 31 and 46. Disposed around the upper portion of race 50 and supporting collar 46 is a ring 51 which has extending from opposed sides thereof pins 52, said pins being rotatably mounted in opposed sides of an outer ring 53. Disposed at right angles to the pins 52 and projecting from the outer ring 53, is a pin 54. This pin has one end loosely mounted in the ring 53 and has its other end secured in the upper portion of post 55, said post extending downwardly and being supported by the motor 20. Directly in line with the pin 54 and secured in the opposite side of the ring 53 is an arm 56, the outer end of which has the upper end of a vertically disposed rod 57 slidably mounted therein. Suitable nuts 58 are secured upon the upper portion of the rod 57 whereas a compression spring 59 is disposed around rod 57 and on the lower side of the lever 56 to normally press the end of the arm 56 upwardly against the nuts 58. The lower end of spring 59 is confined around the rod 57 by means of plate 60, which plate is secured to the upper portion of the motor 20 by means of a bolt 61.

The rod 57 is adapted to be moved up and down to engage and disengage the brake lining 35 from the face of disk 45. When the rod 57 is moved downwardly then the arm 56 and its associated ring 53 will be rotated in a clockwise manner about the pin 54 (Figure 6). This movement will release the upward pressure of the ring 53 against the collar 46, which, in turn, will relieve frictional pressure between the upper side of disk 45 and brake lining 35 because the upper side of shoe 33 will no longer be pressed against the lower side of flange 31a. When the pressure between the faces of disk 45 and brake lining 35 is released, then the shaft 30 and the associated collar 31 will rotate, but the fan blades 39 and associated hub 33 will remain stationary around the shaft because rotation to these members is imparted by virtue of the friction between members 35 and 45.

The lower portion of the race 50 has an outer race 65 mounted therearound and suitable balls 66 are disposed therebetween. A compression spring 67 is disposed directly below the race 50 and has its lower end normally confined around the shaft 30 by means of a cup shaped member 68 which member is secured to the shaft 30 by means of set screw 69. The spring 67 normally presses the members 65, 50, 51, 46 and 45 upwardly against the brake lining 35. Upon the downward movement of arm 56 and the downward movement of rod 57 this spring is compressed to relieve this upward pressure. It is, therefore, seen that it is necessary for the members 35 and 45 to be engaged when the traveler is traveling over machines which are in operation but disengaged when traveling over a machine whenever a doffing operation is being effected.

The lower end of the rod 57 has a block 70 secured thereto which block has a slot 71 therein surrounding the restricted portion 72 of a bolt 73. The bolt 73 is threadably secured in the side of the traveler 10. The lower end of block 70 has a stud 80 extending therefrom which normally contacts cam 81. This cam has depressions 82 and 83, the depressions 82 being disposed nearer the center of shaft 72 than the depressions 83. With the stud 80 in a depression 82 as shown in Figure 5, the upper portion of the rod 57 will be allowed to move upwardly far enough to cause the members 45 and 35 to frictionally engage each other, in which event the rotation of shaft 30 will impart rotation to the fan blades. On the other hand when the cam 81 has been rotated through an angle of 90 degrees from the position shown in Figure 5, the stud 80 will be disposed in depression 83, at which time the rod 57 will be moved downwardly to impart vertical movement to members 56 and 53, and thereby relieve the pressure between the members 35 and 45 (Figure 6).

The cam 81 is an integral part of hub 85 and this hub has radially disposed prongs 86 extending therefrom. Suitable laterally projecting bolts are disposed in the path of the lowermost of these prongs, and when one of these members contacts a bolt 87, a quarter revolution is imparted to the hub 85 and its associated cam 81 to thereby engage or disengage the members 35 and 45.

The bolts 87 are preferably disposed at each end of the textile machines 10 and 11, and adjacent the aisles 12. Each of the bolts is pivoted as at 87a to the upper portion of stand 14. Disposed beneath the bolt 87 is a suitable leaf spring 88 which normally holds the bolt in a laterally extending position. The base of the bolt 87 has a toe portion 87b for limiting the counter-clockwise movement (Figures 2 and 3). When it is desired to rotate the bolt 87 out of the path of the prongs 86 so that the clutch arrangement will not be operated, it is only necessary to pull the free end of bolt 87 downwardly for a quarter revolution to a point where this bolt will be in a plane parallel to the motor shaft 30.

In Figure 1 the fan is shown disposed over the aisle 12 at which time the stud 80 in Figure 5 is disposed in a cavity 82 which will allow the members 35 and 45 to be engaged and cause the fan to be in operation. As the fan moves to the left, if machine 11 is being doffed, a laterally extending bolt 87 will be set in horizontal position to be in the path of a prong 86, and impart a quarter revolution to the cam 81. This, of course, will disengage the clutch and cause the fan to cease operation but at the same time the motor 20 will propel the traveler 10 over the textile machine 11. After the carriage has reached the other end of the textile machine, another bolt 87 will be set in horizontal position to engage one of the downstanding prongs 86

and impart another quarter revolution which will place the stud 80 in another depression 82, at which time the clutch members 35 and 45 will again become engaged and the fan will resume its operation.

The fan is encased by a suitable casing 90 which has removably secured in the upper portion thereof, a ring 91. The upper end of the ring 91 has a diametrically disposed member 92 mounted thereon the center of which supports a plurality of adjustable vanes 93 as at 94. These vanes are rotated to different positions in order to vary the size of the opening in the upper side of the casing 90.

The lower side of casing 90 has bifurcated skirts 96 and 97 for the accommodation of the upper edges of spouts 98 and 99, respectively, said spouts being secured as at 100 and 61, respectively, to the upper side of motor 20 (Figure 2). Suitable straps 105 and 106 are secured to opposed sides of the casing 90 by means of rivets 107 and 108 and these straps have suitable slots 109 and 110 therein which are penetrated by bolts 111 and 112, respectively. These bolts also penetrate spouts 98 and 99 and hold them in adjusted position relative to straps 105 and 106. For example, if it is desired to vary the position of the lower ends of the spouts 98 and 99, so as to direct blasts of air in a different direction, then nuts 111 and 112 may be loosened and rotation imparted to the respective spouts. Although these spouts are not provided they are made of material sufficiently flexible to allow bending without damaging the material. The bending or pivoting takes place at points 98a and 99a. The lower end of spouts 98 and 99 have pivoted thereto, as at 115 and 116, nozzles 117 and 118, respectively. Also disposed in the spouts 98 and 99 are vanes 119 and 120 which are rotated to proportion the amount of air which is delivered by the lower pivoted nozzles 117 and 118.

Figures 7 to 11, inclusive, show another form of the invention which is in many respects similar to the form of the form shown in Figure 6 of my co-pending application, Serial No. 59,614, filed January 17, 1936. In this form of the invention, the trackways 15 and 16 have mounted thereon a traveler 129 provided with wheels 130 and 131, respectively, said wheels, being mounted upon the ends of transverse shafts 133 and 133a. This shaft is rotatably mounted in housing 134 and has a gear 135 fixedly secured to the intermediate portion. The gear 135 meshes with a worm 136 which worm is driven by motor 137, said motor being supported by the carriage 134. As the motor 137 is operated, it is evident that rotation will be imparted to the wheels 131 and 132 through the members 135 and 135 and 133.

The motor, 137 has wires 140 and 141 leading from opposed sides thereof, said wires being also connected to wires 142 and 143 respectively. Wire 140 has a hand switch 144 disposed therein which may be operated manually to cut off the motor 137. The wires 142 and 143 are connected to terminals 146 and 147, which terminals contact trolley wires 148 and 149, respectively, which are disposed below the trackway. It is seen that the motor 137 which drives the housing 134 will rotate at all times and is controlled by switch 144.

Mounted upon the housing 134 is a support 155, the ends of which project to an overhanging position relative to the tracks 15 and 16. Each end of the member 155 has a socket 156 secured thereto in which balls 157 or bracket 158 are adapted to fit. Mounted in the brackets 158 are motors 160 and 161, said motors having shafts 162 and 163 with fans 164 and 165, respectively, mounted thereon. These fans have guards 166 and 167, respectively surrounding the same. The motors 160 and 161 are hooked up in parallel by wires 168 and 169, the wire 168 having switches 170 and 171 for controlling the current to motors 160 and 161, respectively. Leading from the wire 168 is another wire 172, the other end of which is secured to terminal 173. This terminal is mounted in insulation block 174, which block is supported by bracket 175, said bracket extending outwardly from the housing 134.

By observing Figure 10, it is seen that the block 174 has notches 177, 178, 179 and 180 cut in the face thereof. The notch 180 has extending thereinto another terminal 181 which is identical to the terminal 173. Leading from this terminal are wires 141 and 142 which have been previously described. By observing the wiring diagram in Figure 11, it is seen that when the terminals 173 and 181 are connected that current will flow to the motors 160 and 161, that is, when the switches 170 and 171 are closed.

It should be stated that when this form of the invention is employed in combination with a plurality of spinning frames and it is desired to cut off the air while the traveler passes over a frame, as in case of a doffing operation being effected, means must be provided for breaking the connection between the terminals 173 and 181, while the fans are passing over the textile machine to eliminate draughts, and also means must be provided for making contact between these two terminals when the fans pass over the machines in operation.

In order to accomplish this result, I have provided a rotary switch bar 185 which has alternate positions in which the terminals 181 and 173 are contacted and which also has alternate positions in which the terminals are not contacted. In other words, the switch bar 185 is so actuated that while the fans are passing over a machine not in operation the switch bar 185 will have its extremities resting in notches 178 and 180 in a non-contacting position whereas while the fans pass over a machine in operation, the switch bar will be resting in notches 177 and 179 and at the same time contacting the terminals 173 and 181.

The switch bar 185 is fixedly secured upon shaft 190 which shaft has one end thereof rotatably mounted in bore 191 in block 174. The other end of shaft 190 is rotatably mounted in housing 192, said housing being secured to the bracket 175. A suitable spring 198 is disposed around the shaft 190 one end of which normally presses against the bar 185 and its other end being confined upon the rod by the housing 192. This spring presses the bar 185 against block 174 at all times. The end of the shaft 190 nearest the observer in Figure 10 is adapted to penetrate a hole 192a in housing 192 and upon the projecting end of the shaft, a suitable insulation block 193 is mounted. This block has radially disposed arms 194 extending therefrom. When in assembled position, laterally projecting bolts 195 will extend into the path of these arms, said bolts being pivoted as at 196 to the side of rail 16. This bolt has a curved end 195a which presses against the rail 16, when in an extended position and is held in this position by means of tension spring 197. When it is desired to move the bolt 195 out of the path of the radially disposed arms 194 so that the fans 164 and 165 will operate continuously, over all of the frames 10 and 11

it is only necessary to rotate the bolt 195 to dotted line position (Figure 9), at which time the spring 197 will also hold the bolt 196 out of the path of the arms 194. As the traveler 120 moves to the left along the trackway, it is evident that a prong 194 will engage the laterally extending bolt 195 and cause the shaft 190 to rotate substantially through an angle of 90 degrees. If the switch bar 185 is disposed in cavities 177 and 179, that is in contact position, the rotation of the shaft by the engagement of members 194 and 195 will rotate the same bar into the adjacent cavities 178 and 180, at which time no contact will be made and the circuit to the fan motors 161 and 160 will be broken.

It is therefore seen that I have also provided an electrical means for automatically and periodically controlling the air delivery of a cleaning apparatus for textile machinery.

In the drawings and specification, there has been set forth preferred embodiments of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:

1. In a traveling cleaner apparatus having a motor for propelling the same along a suitable trackway and having a fan clutched to said motor to be driven thereby for producing blasts of air as the apparatus travels along said trackway, and means carried by the apparatus and cooperating with other means disposed at spaced intervals along the trackway for disconnecting the fan from the motor at predetermined times and for predetermined intervals, and again connecting the fan to the motor.

2. A traveling cleaner apparatus comprising a motor and a fan, means driven by the motor for propelling the apparatus successively over a plurality of machines; means for driving the fan, means acting at predetermined points in the travel of the apparatus for rendering the means for driving the fan inactive, and after the apparatus has traveled a predetermined distance for again rendering active the fan driving means.

3. In a traveling cleaner apparatus for travel over a plurality of machines and having a motor for propelling the apparatus and driving a fan for creating blasts of air to strike the machines as the apparatus passes successively over the machines, disconnectible means between the motor and the fan, means settable at will for actuating the disconnectible means for rendering the fan inoperative, and other means settable at will for again actuating the disconnectible means for rendering the fan operative.

4. In a traveling cleaner apparatus adapted to travel along a trackway and having a motor for propelling the apparatus and also having blast producing means carried by the apparatus, means carried by the apparatus for controlling said blast producing means, and means mounted independently of the apparatus and arranged in the path of the travel of the apparatus for cooperation with the means carried by the apparatus for controlling the blast producing means, for rendering the blast producing means inoperative for predetermined periods of travel of the apparatus.

5. In a traveling cleaner apparatus having wheels adapted to travel along a trackway, an electric motor having a driving connection with said wheels, a fan driven by said motor for creating blasts of air while the apparatus is traveling along the trackway, disconnectible means between the fan and the motor, fixed means for disconnecting the fan from the motor, and other fixed means for connecting the fan to the motor.

6. In a traveling cleaner apparatus having a motor for propelling the apparatus along a suitable trackway and also having a blast producing means driven by the same motor, means carried by the apparatus for controlling the blast producing means, and means remotely mounted from the apparatus and independent thereof for actuating the controlling means to render the blast producing means inoperative and operative at will during predetermined periods of travel of the apparatus.

7. In a traveling cleaner apparatus having wheels adapted to travel along a trackway, an electric motor having a driving connection with the wheels of the apparatus for propelling the same along the trackway, said motor having a motor shaft, a fan loosely mounted on said motor shaft, a clutch disposed between the motor shaft and said fan, means settable at desired points on the trackway for opening said clutch to render the fan inoperative, and other means settable at desired points on the trackway for closing said clutch and again rendering the fan operative, after the apparatus has traveled a predetermined distance along the trackway.

8. In a traveler adapted to pass over a plurality of machines successively and having means for propelling the traveler and also having means for creating blasts of air to strike the machines as the traveler passes over the machines, means for rendering the blast producing means inoperative for predetermined length of travel while maintaining in operation the means for propelling the traveler, and means operable after the traveler has moved a predetermined distance for again rendering the blast producing means operative.

9. In a traveling cleaner apparatus adapted to travel on a suitable trackway and having means for imparting travel to the apparatus along the trackway and for creating blasts of air as the apparatus moves along the trackway and means for rendering the blast producing means inoperative for a predetermined length of travel while maintaining in operation the means for imparting travel to the apparatus.

10. Apparatus for removing lint and other foreign particles from machinery and being adapted to travel along a trackway disposed over a plurality of machines, a motor driven traveler mounted on said trackway to pass successively over said machines, said traveler being provided with means for producing downwardly directed blasts of air to strike the machines as the traveler passes over the same, and means for rendering the blast producing means inoperative while passing over a selected machine and for again rendering the blast producing means operative after it has passed over the selected machine.

11. In a traveling cleaner apparatus adapted to travel on a trackway above a plurality of machines and to successively traverse said machines and having an electric motor for propelling the apparatus along the trackway, a member disposed transversely of the line of travel of the apparatus and having an electric motor mounted on each end thereof, a circuit for the motor propelling the apparatus, a second circuit for the two motors mounted on the ends of said transversely disposed member, a fan driven by each

motor disposed on the end of said transversely disposed member, and means engageable by the apparatus for breaking the circuit to the motors having fans thereon at one point in the travel of the apparatus in its movement along the trackway, and other means engageable by the apparatus for again restoring the circuit to the fan motors after the apparatus has traveled a predetermined distance after the breaking of the fan motor circuit.

WILLIAM B. HODGE.

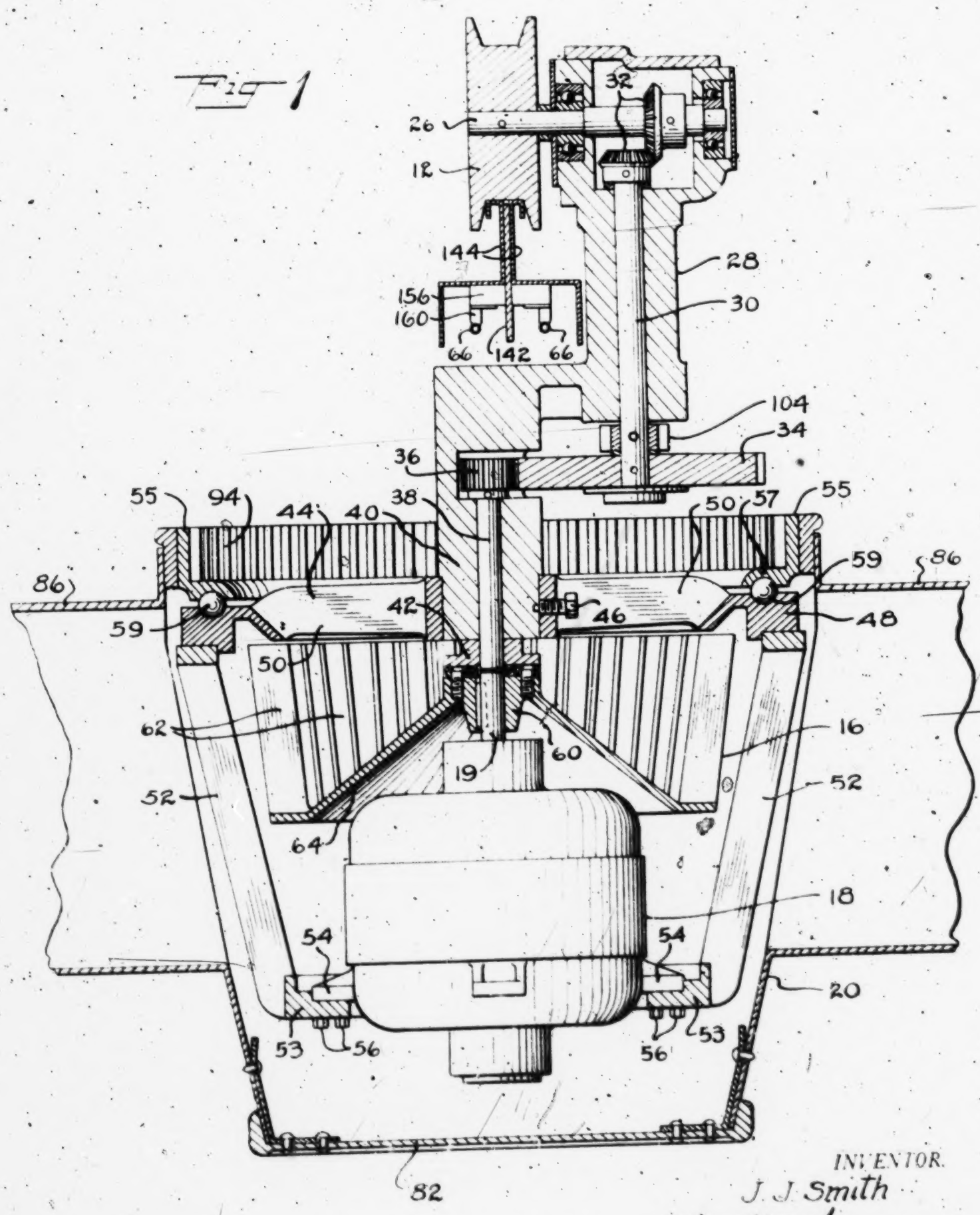
DEFENDANT'S EXHIBIT M.

May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 1

Fig 1



INVENTOR.
J. J. Smith
BY Bartell Monroe
ATTORNEYS.

May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 2

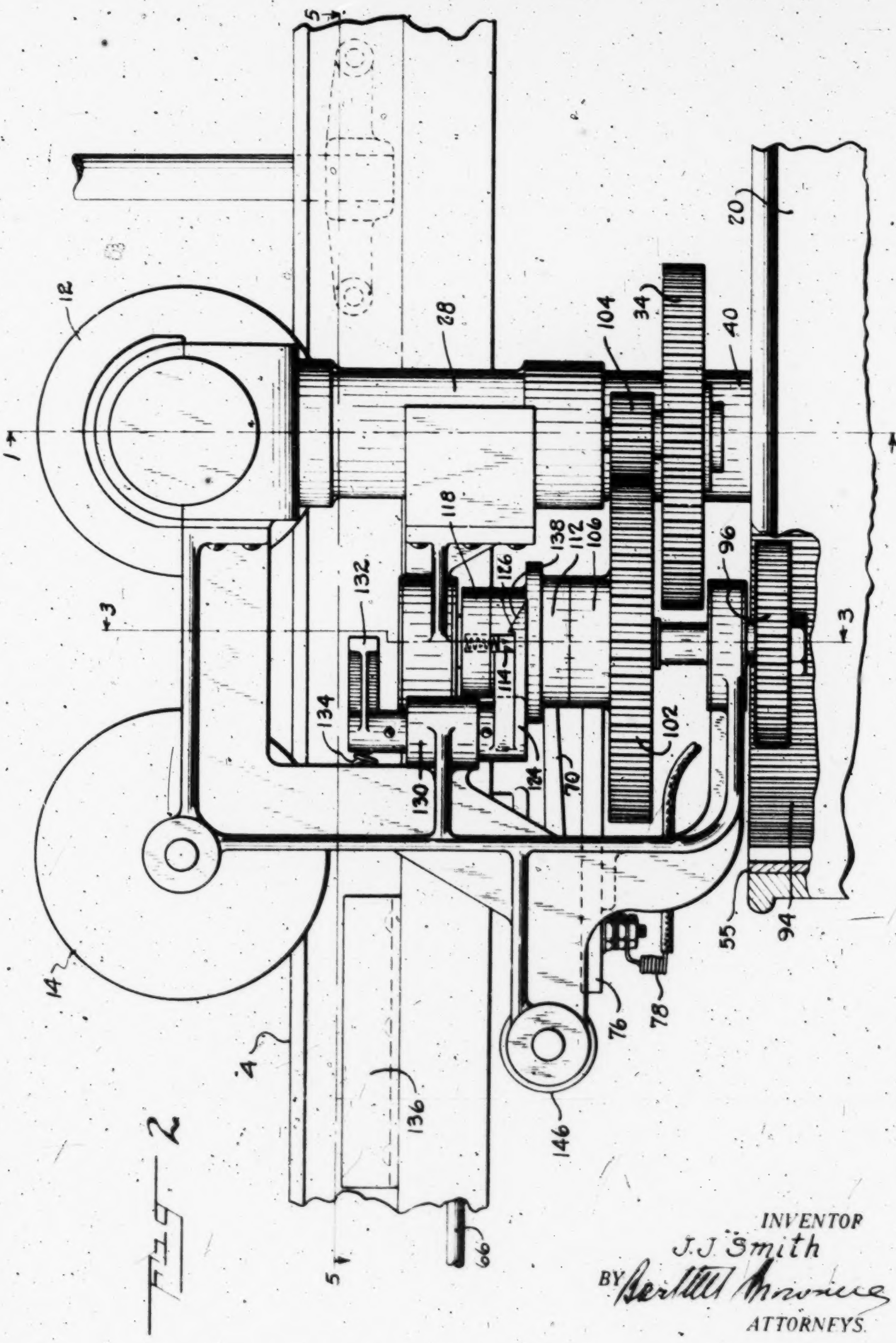


FIG. 2

INVENTOR
J. J. Smith
BY Berthell Strauss
ATTORNEYS.

May 10, 1932. J. J SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 3

Fig 4

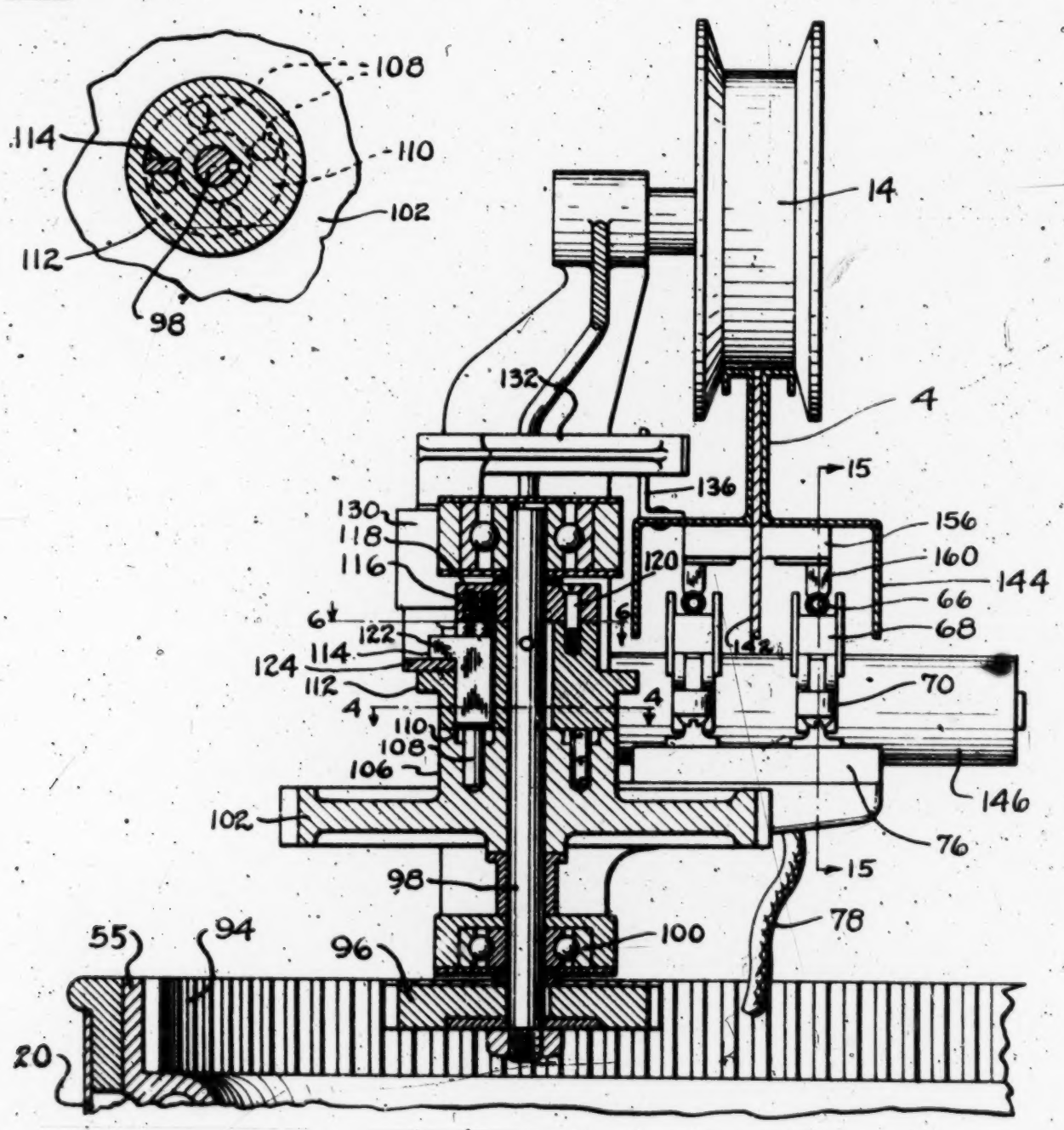
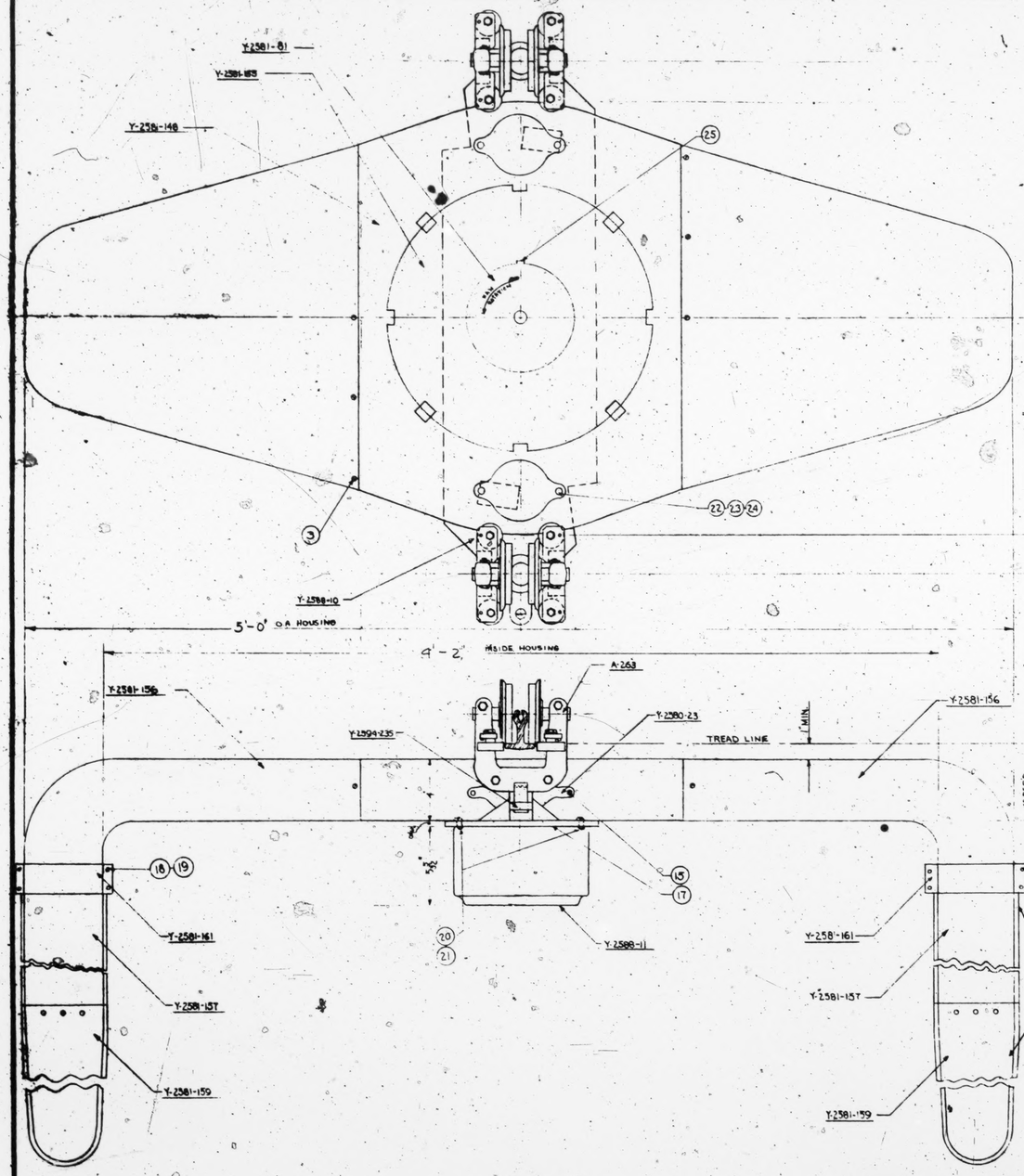
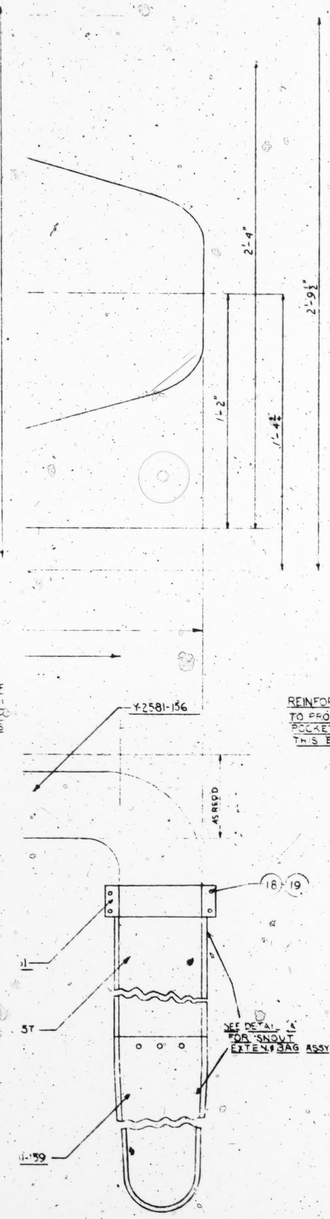


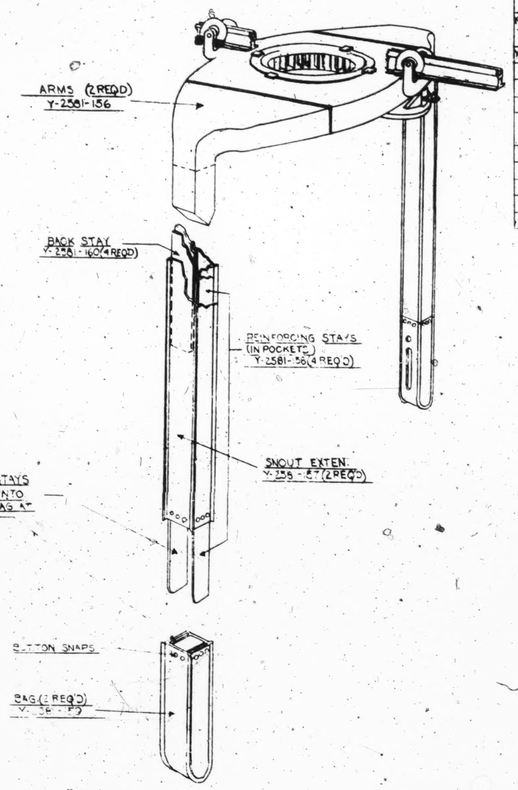
Fig 3

INVENTOR.
J.J Smith
BY Bartlett Thurmond
ATTORNEYS.

PART OR SUB ASS'Y NUMBER	REQ	DESCRIPTION	ITEM
Y-2588-10	1	PLATE - DWG Y-2588-10C1	1
Y-2581-156	2	SPECIAL ARMS - DWG Y-2581-156 D1	2
—	12	NO 8 x 3/8 SHEET METAL SCREWS	3
A-263	2	TROLLEY - DWG A-263 BLAMOD (GREEN 87 3936)	4
Y-2581-148	1	CENTER HOUSING - DWG Y-2581-148 D1	5
Y-2581-61	1	FAN - DWG. Y-2581-61 D1	6
Y-2581-156	1	INTAKE PLATE - DWG Y-2581-156 A1	7
Y-2581-63	2	SNOUT EXTEN. - DWG Y-2581-B15	8
Y-2581-158	4	REINFORCING STAYS - DWG Y-2581-B15	9
Y-2581-159	2	BAG - DWG. Y-2581-B15	10
Y-2581-160	4	BACK STAYS - DWG. Y-2581-B15	11
Y-2581-161	8	CLAMPS - DWG Y-2581-B15	12
Y-2588-11	1	1 H.P. REULAND WAFER MOTOR 1725 R.P.M. 110V-3PH. 60CYC.	13
Y-2580-23	2	NAME PLATE 40MO6RAM-Y2580-23A1	14
—	4	#6-4 SHEET METAL SCREW	15
Y-2594-235	2	DRAWBAR CONNECTION SEE DWG Y-2594-235A1	16
—	4	3/8 F.H. MACH. SCREWS x 1/2 LG.	17
—	16	1/4-20 x 1/2 PAN HD	18
—	16	1/4-20 ESNA STOP NUT	19
—	4	1/4-20 RD HDS x 3/8 LG.	20
—	4	1/4-20 INT SHAKEPROOF L.W	21
—	2	1/4-20 ESNA	22
—	2	1/4-20 WING NUT	23
—	4	1/4-20 x 1/2 PAN HD MACH SCREWS	24
—	1	KEY 5/16 x 2 1/2 LG.	25







Interrogatory Exhibit No. 1

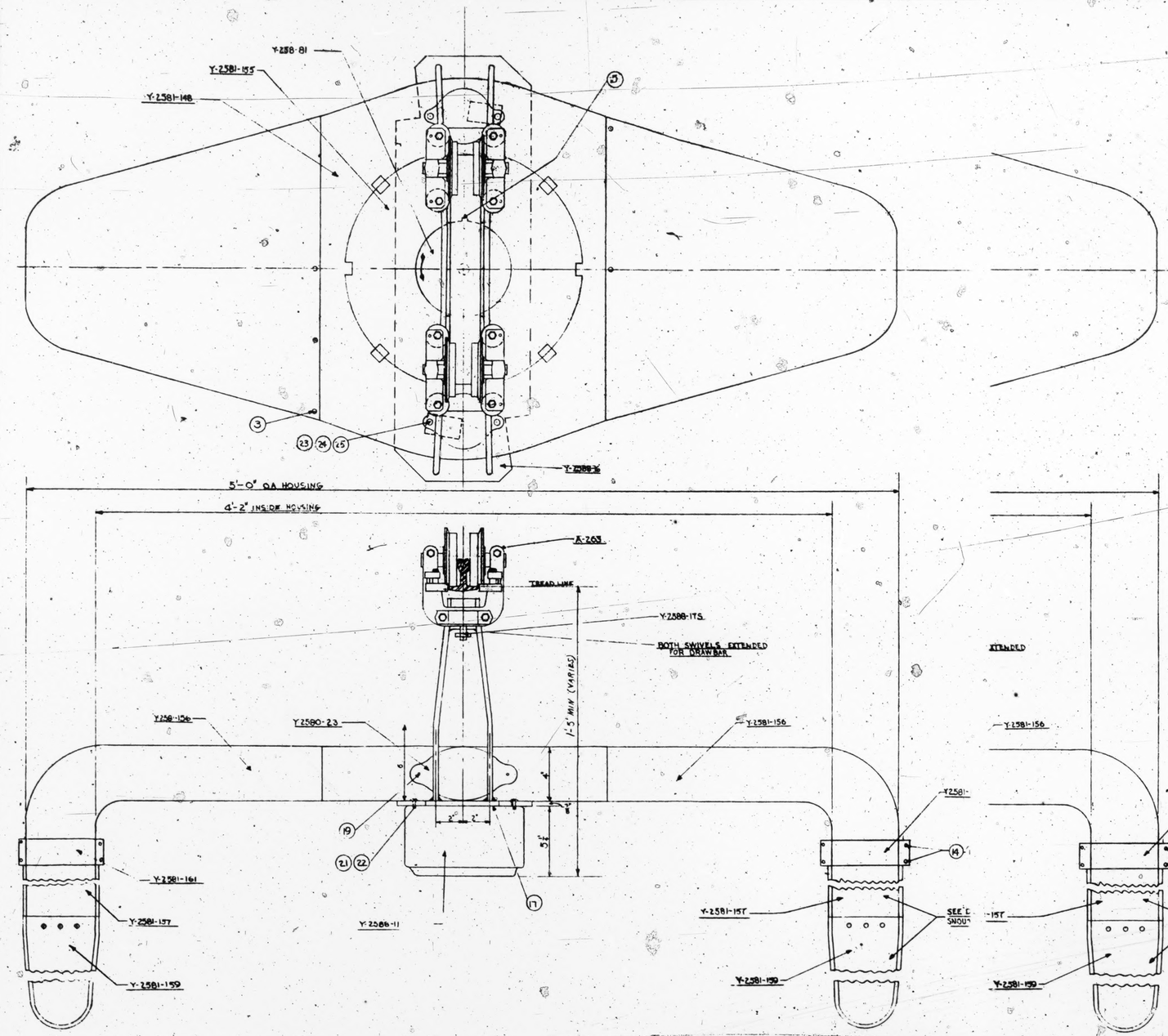
REFERENCE DRAWINGS	DATE	REVISED AS TO	BY

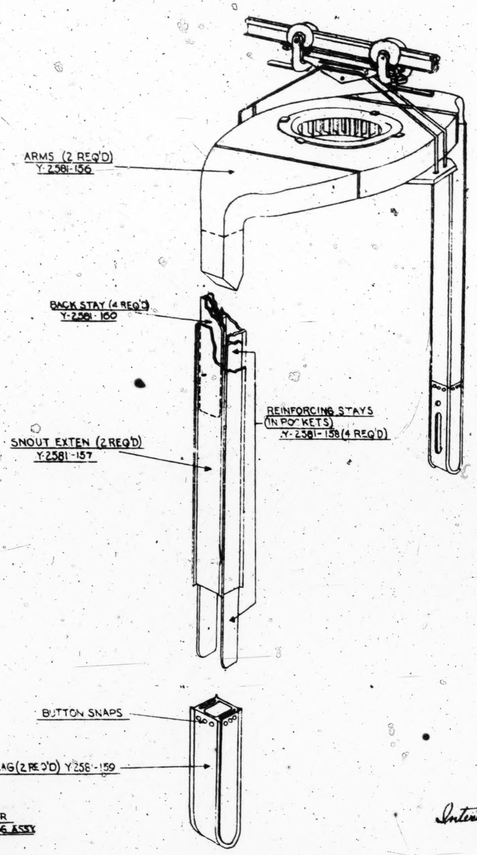
THE AMERICAN MONORAIL CO.

EXTERNAL FRAME CLEANER FOR 401

DRAWN D.L.B.
APPROVED
SCALE 3"/1'-0"
DATE 11/24/55
ORDER No.
No. Y-2588-MSD1

4 A.O.F.





DETAIL 'A'

PART OR SUB ASM NUMBER	REQ'D PER ASSY	DESCRIPTION	ITEM
Y-2588-145	1	PLATE - DWG Y-2588-16401	1
Y-2581-156	2	SPECIAL ARMS - DWG Y-2581-1526	2
–	12	N° 8 × ⅜" SHEET METAL SCREWS	3
A-263	2	TROLLEY - DWG. A-263-B1 (AMCO GRUEBY N7-3938)	4
–	1	KEY ⅜" × 2½" LG.	5
Y-258-148	1	CENTER HOUSING - DWG Y-258-1400	6
Y-258-81	1	FAN - DWG. Y-258-81B1	7
Y-2581-155	1	1ST INTAKE PLATE - DWG Y-2581-155A1	8
Y-2581-157	2	SNOUT EXTEN - DWG. Y-2581-B15	9
Y-2581-138	4	REINFORCING STAYS - SEE DWG. Y-2581-B15	10
Y-2581-159	2	BAG - DWG Y-2581-B15	11
Y-2581-160	4	BACK STAYS - DWG. Y-2581-B15	12
Y-2581-161	8	CLAMPS - DWG. Y-2581-B15	13
–	16	¼-20 × ½" PAN HD.	14
–	16	¼-20 ESNA STOP NUT	15
Y-2588-11	1	1 HP. REULAND WAFER MOTOR 1725 R.P.M. 110V-3PH. 60 CYC.	16
–	4	#8 FH. MACH SCREWS × ⅝ LG.	17
Y-2580-23	2	NAME PLATE MONOGRAM - SEE DWG.	18
–	4	#6 × ½" SHEET METAL SCREW	19
Y-2588-175	2	DRAWBAR - DWG. Y-2588-175A1	20
–	4	¼-20 RD. HD. × ⅜ LG.	21
–	4	¼-20 INT SHAKEPROOF L.W.	22
–	2	¼-20 ESNA	23
–	2	¼-20 WING NUTS	24
–	4	¼-20 × ½ PAN HD. MACH. SCREW	25

Interrogatory Exhibit No. 2

REFERENCE DRAWINGS	DATE	REVISED AS TO	BY

NOTE: ALL ELECTRIC POWER FEED CONNECTIONS TO BE MADE BY OTHERS.

THE AMERICAN MONORAIL CO.

DRAWN OFFICE OR REPRESENTATIVE IN ALL PRINCIPAL CITIES

MAIN OFFICE & FACTORIES - CLEVELAND, OHIO

EXTERNAL FRAME CLEANER

DRAWN D.L.B.

APPROVED _____ CHECKED _____ DATE _____

SCALE 3"=1'-0"

ORDER No. _____

No. Y-2588-155D1

DEFENDANT'S EXHIBIT A.

Dec. 26, 1939.

W. B. HODGE

TRAVELING CLEANER

Filed May 23, 1938

2,184,880

3 Sheets-Sheet 1

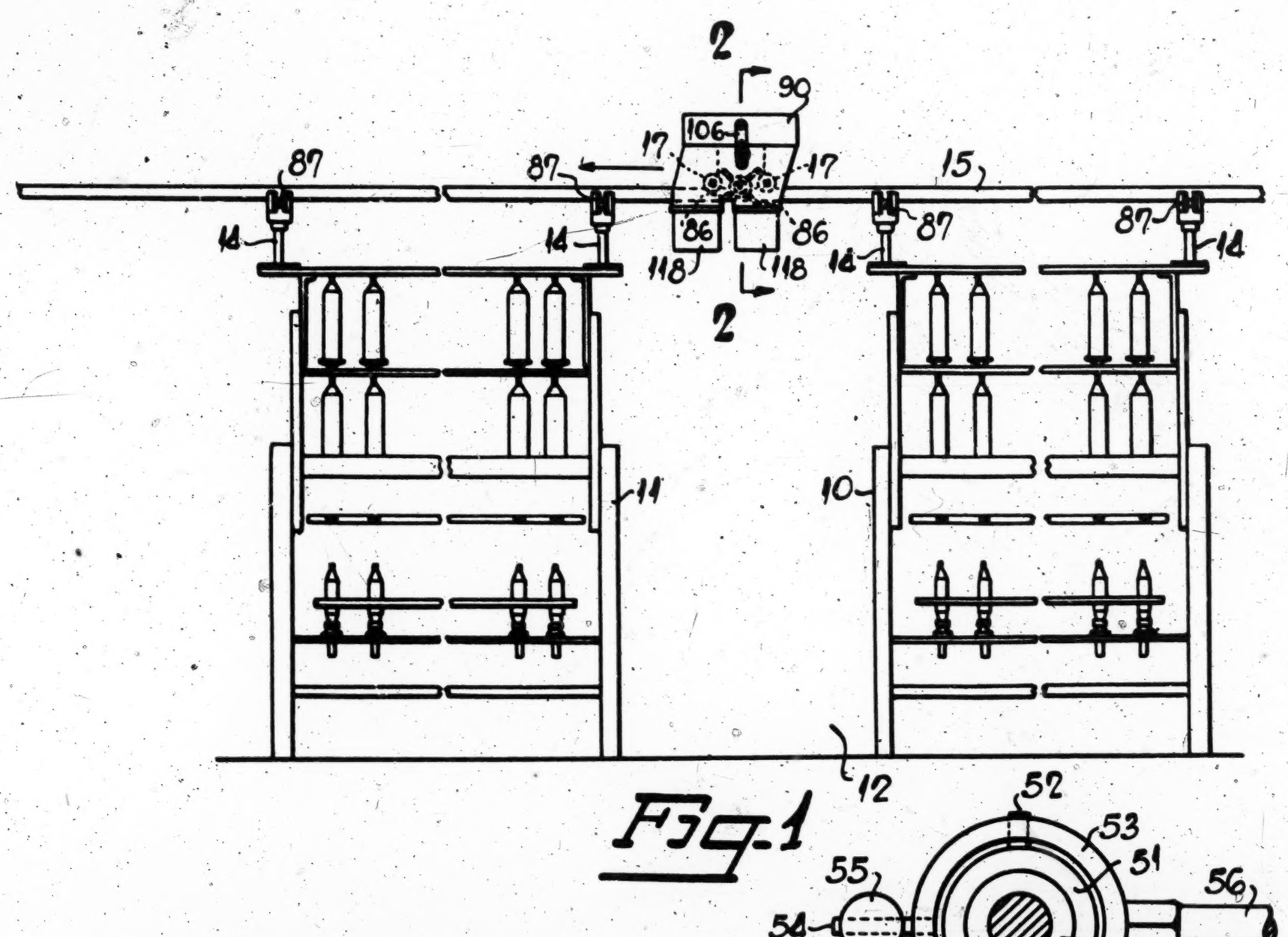


Fig. 1

Fig. 6A

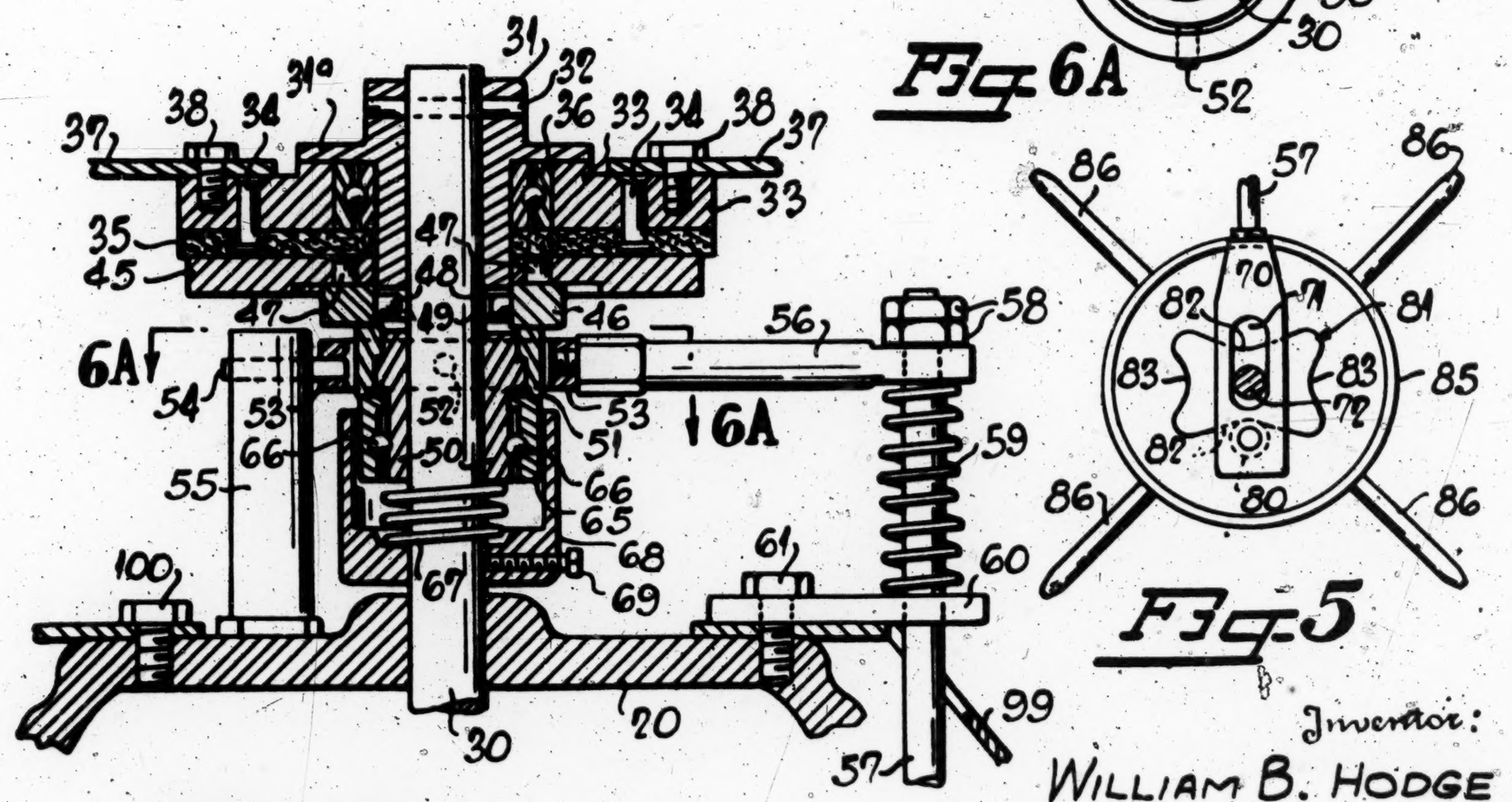
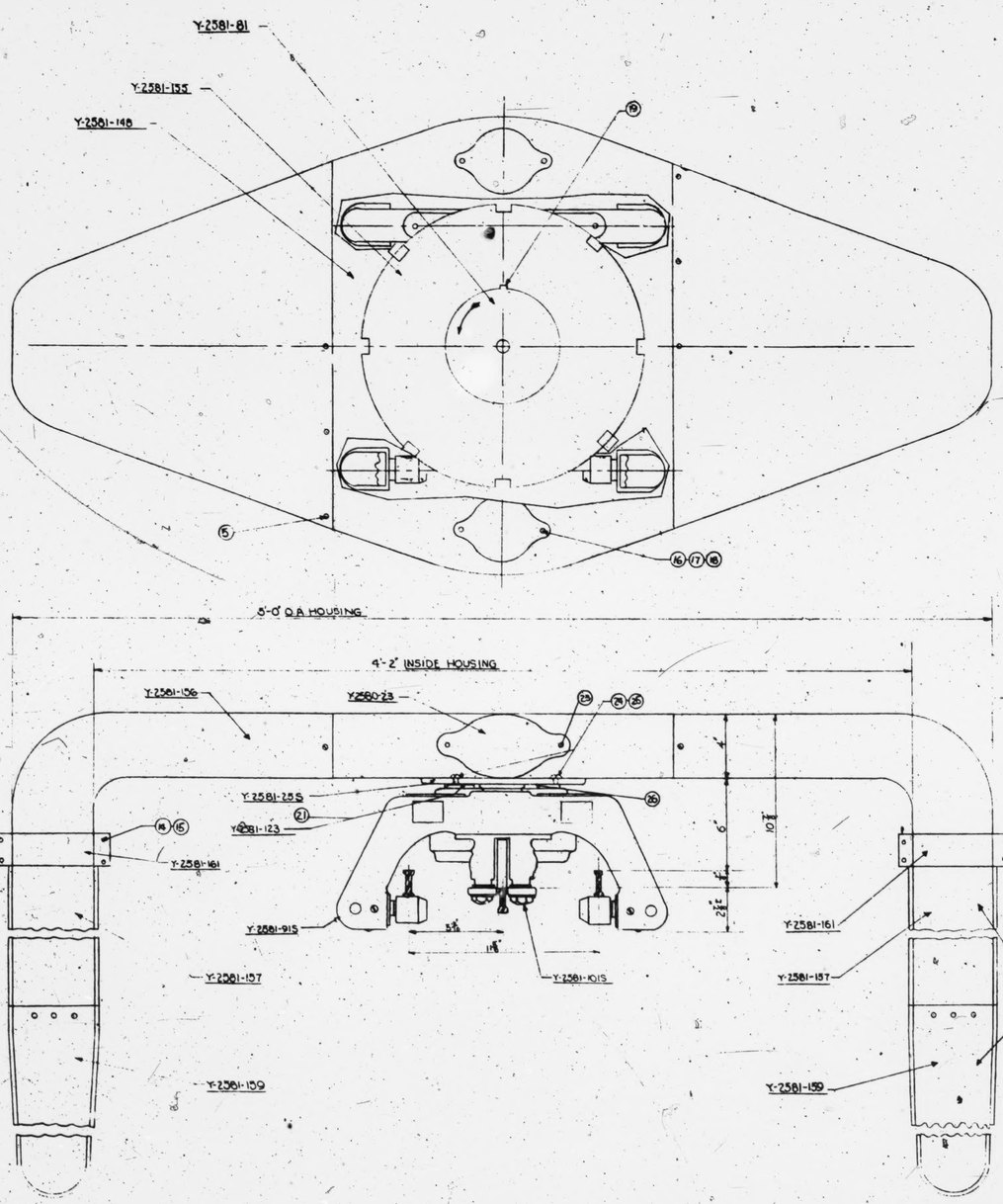


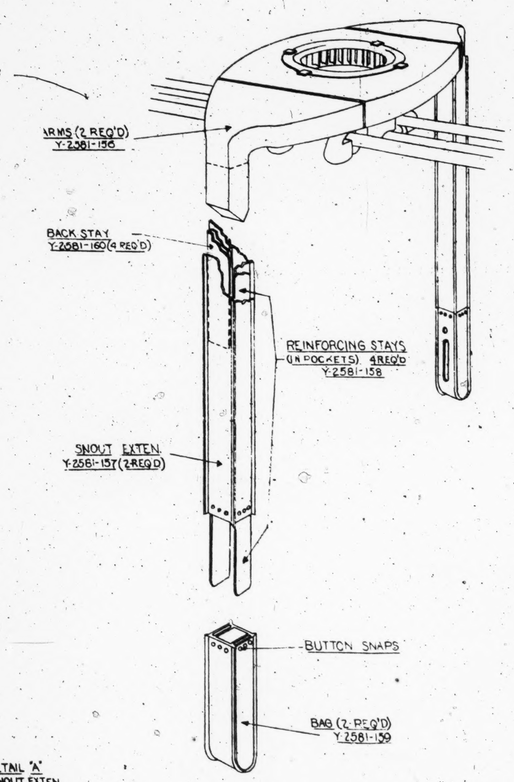
Fig. 6

Fig. 5

Inventor:
WILLIAM B. HODGE

By Powell Eaton
Attorney





PART OR SUB ASS'Y NO	REQ'D PER ASSY.	DESCRIPTION	ITEM
Y-2581-255	1	BLOWER MOTOR & MTG. BR.	1
		ASS'Y. - DWG. Y-2581-25SE-1	
Y-2581-1015	2	IDLER WHEEL ASS'Y - SEE	2
		DWG. Y-2581-1015C-2	
Y-2581-915	2	WING CASTING ASS'Y - DWG.	3
		Y-2581-D9	
Y-2581-156	2	SPECIAL ARMS DWG Y-2581-156D-1	4
	12	Nº 8 × 3/8 SHEET METAL SCREWS	5
Y-2581-148	1	CENTER HOUSING - DWG. Y-2581-148D1	6
Y-2581-81	1	FAN - DWG. Y-2581-81B-1	7
Y-2581-135	1	7" INTAKE PLATE - DWG Y-2581-135A1	8
Y-2581-157	2	SNOUT EXTEN. DWG. Y-2581-B15	9
Y-2581-158	4	REINFORCING STAYS - SEE DWG.	10
		Y-2581-B-15	
Y-2581-159	2	BAG - DWG. Y-2581-B15	11
Y-2581-160	4	BACK STAY - DWG. Y-2581-B15	12
Y-2581-161	8	CLAMPS - DWG. Y-2581-B15	13
-	16	1/4-20 × 1/2 PAN HD	14
-	16	1/4-20 ESNA STOP NUT	15
-	2	5/16-20 ESNA	16
-	2	1/4-20 WING NUTS	17
-	4	1/4-20 × 3/4 PAN HD MACH. SCREW	18
-	1	KEY 3/16 × 2 1/2 LG.	19
Y-2581-123	1	SERIAL Nº NAME PLATE SEE DWG	20
		Y-2581-123A1	
-	4	Nº 2 DRIVE SCREW FL HD. TYPE "U"	21
		3/8 LG.	
Y-2580-23	2	NAME PLATE MONOGRAME - DWG	22
		Y-2580-23A1	
-	4	#6 × 1/4 SHEET METAL SCREWS	23
-	4	1/4-20 RD HD. × 3/4 LG.	24
-	4	1/4-20 INT. SHAKEPROOF L.W.	25
-	4	3/8 F.H. MACH. SCREWS × 3/4 LG.	26

Interrogatory Exhibit No. 3

NOTE: ALL ELECTRIC POWER FEED CONNECTIONS TO BE MADE BY OTHERS.

REFERENCE DRAWINGS

REFERENCE DRAWINGS	DATE	REVISED AS TO	BY

THE AMERICAN MONORAIL CO.

TRAILER TYPE EXTERNAL FRAME CLEANE ASS'Y. to TRI-RAIL

BRANCH OFFICES OR REPRESENTATIVES IN ALL PRINCIPAL CITIES

MAIN OFFICE & FACTORIES - CLEVELAND, OHIO

DRAWN D.L.B

APPROVED CHECKED DATE 9/2/55

SCALE 3"=1'-0"

ORDER No. No. Y-2581-1625D-2

Dec. 26, 1939. W. B. HODGE 2,184,880

TRAVELING CLEANER

Filed May 23, 1938 3 Sheets-Sheet 2

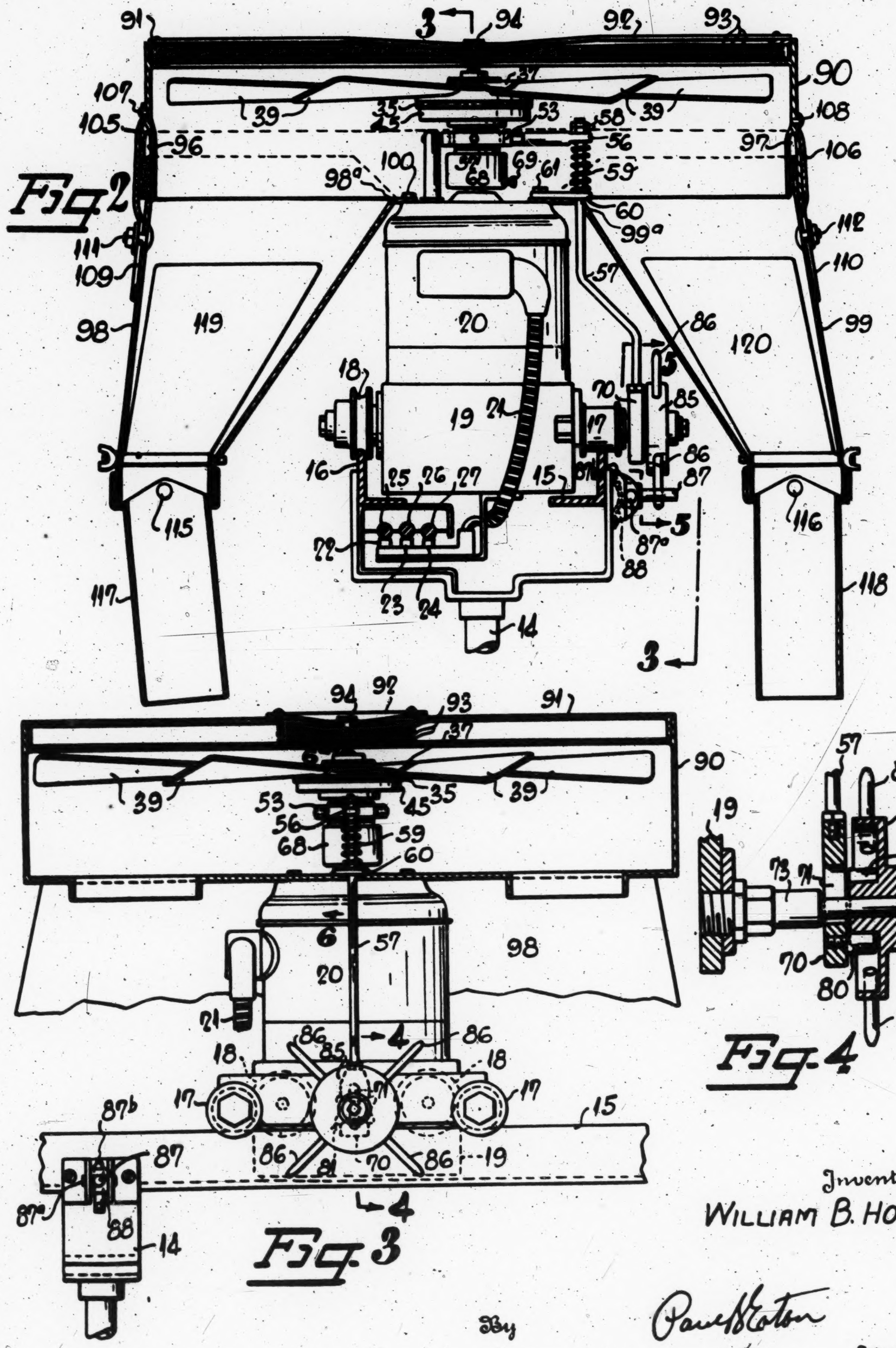


Fig 2

Fig 3

Fig 4

Inventor:
WILLIAM B. HODGE.

By Paul Eaton
Attorney

Dec. 26, 1939. W. B. HODGE 2,184,880

TRAVELING CLEANER

Filed May 23, 1938 3 Sheets-Sheet 3

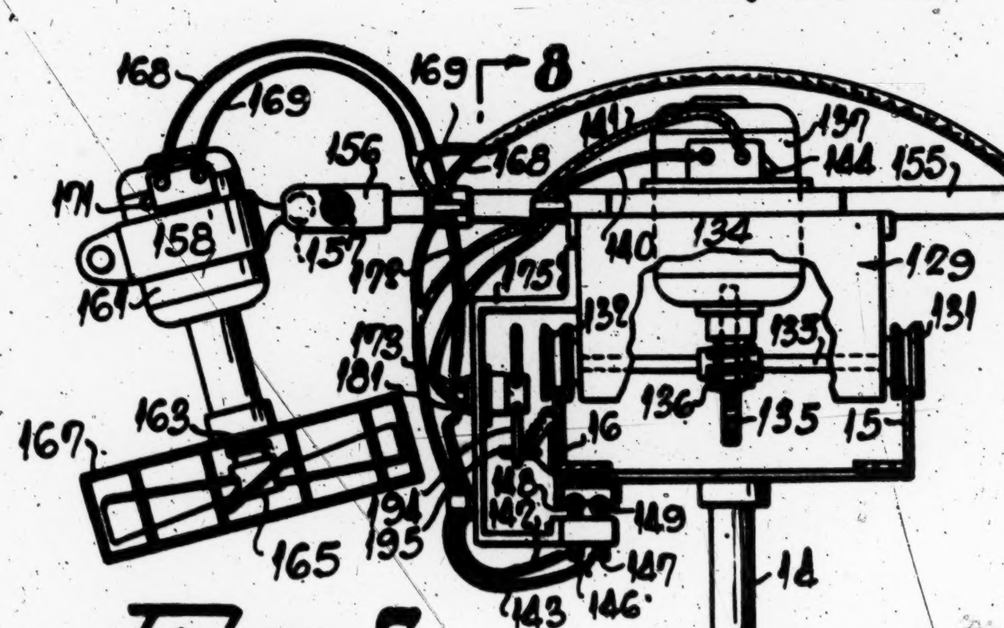


Fig. 7

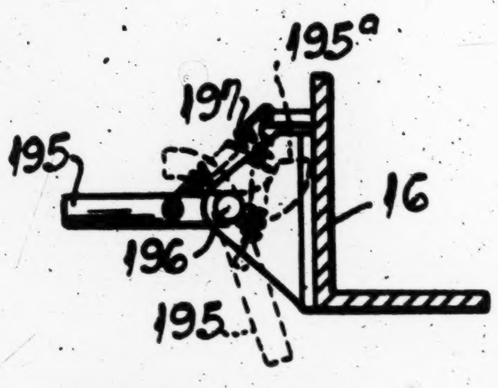


Fig. 9

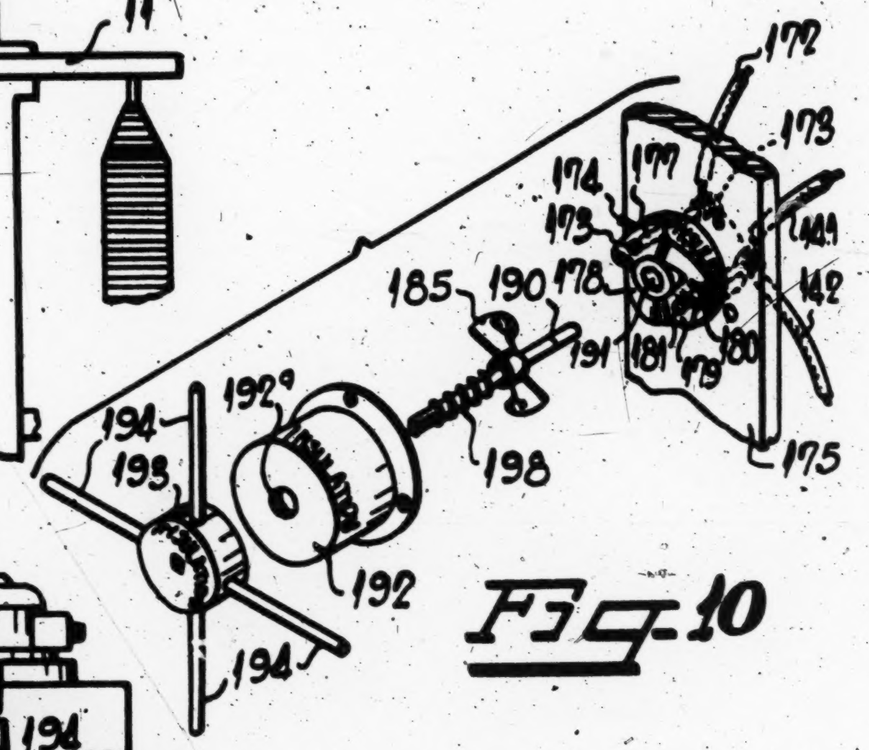


Fig. 10

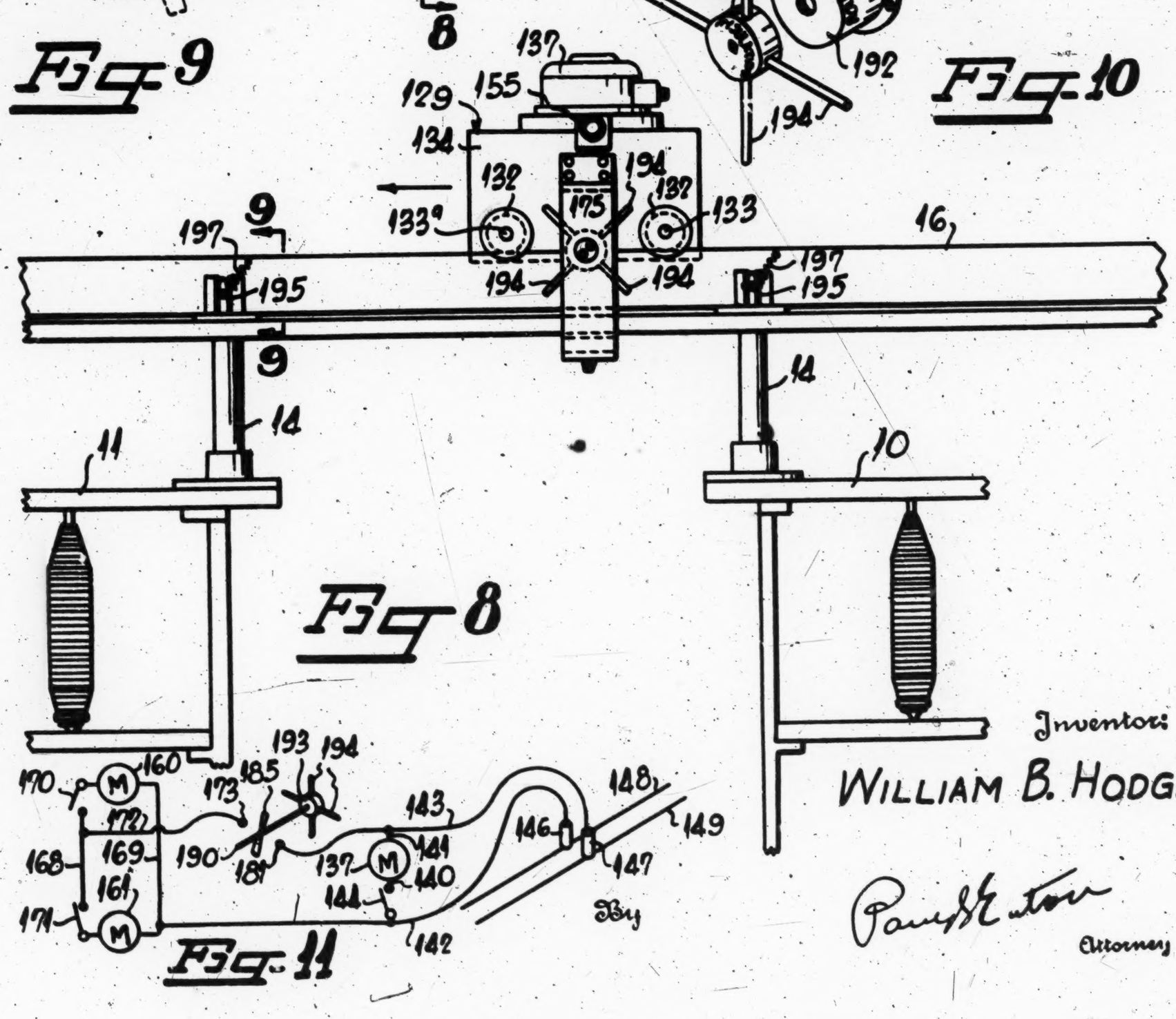


Fig. 8

Fig. 11

Inventor:
WILLIAM B. HODGE

Attorney

157a

May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 4

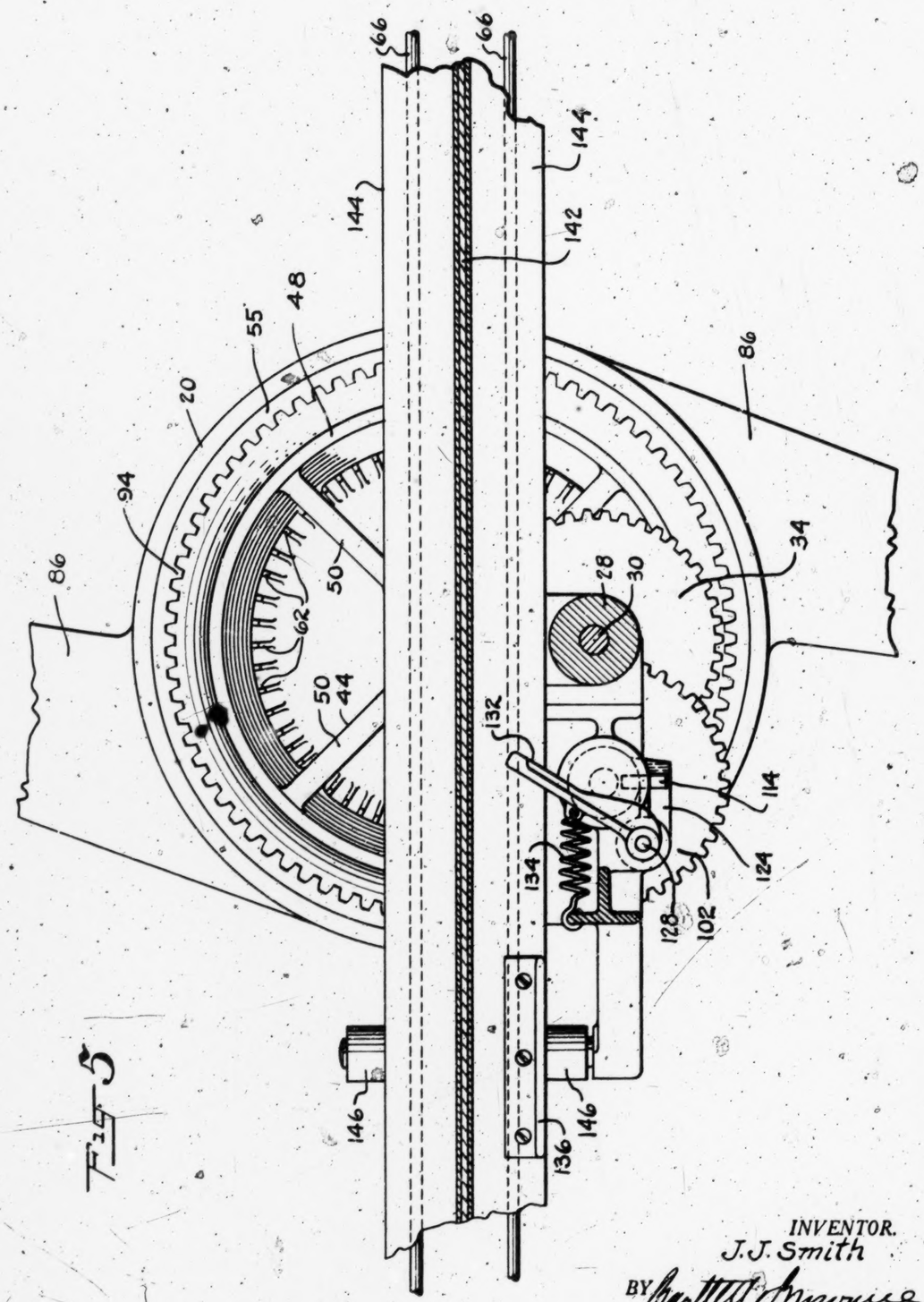


Fig. 5

INVENTOR.
J. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 5

Fig 6

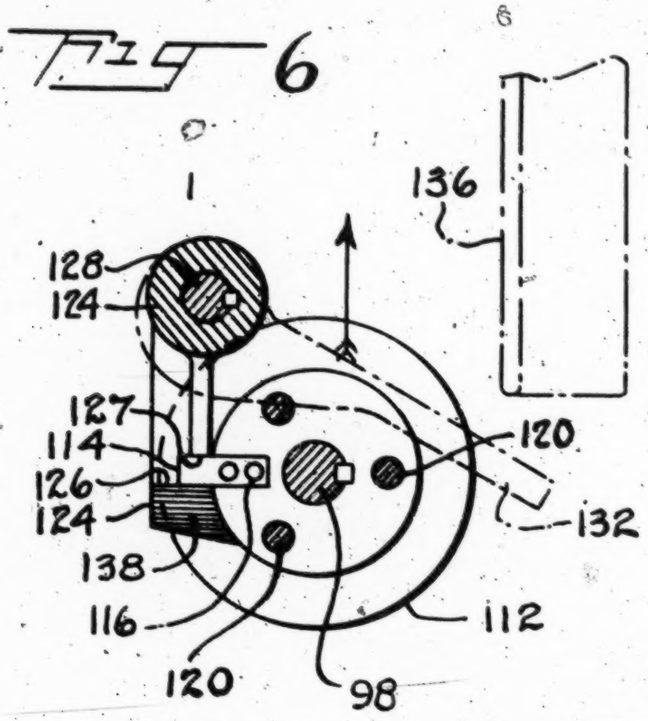


Fig 7

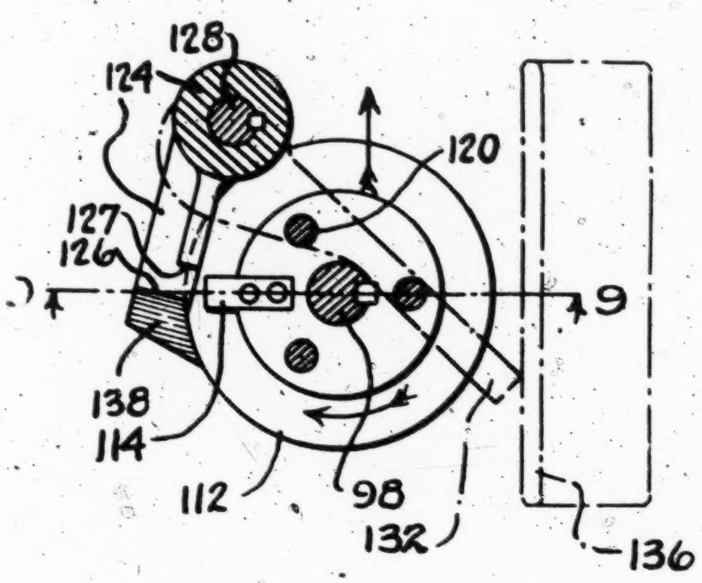


Fig 8

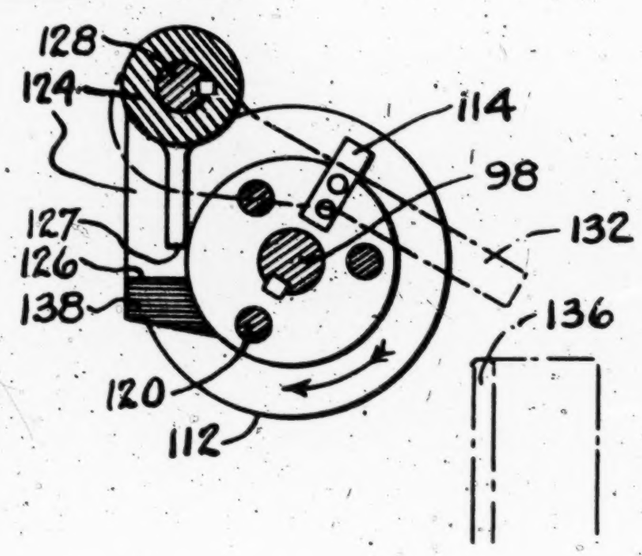
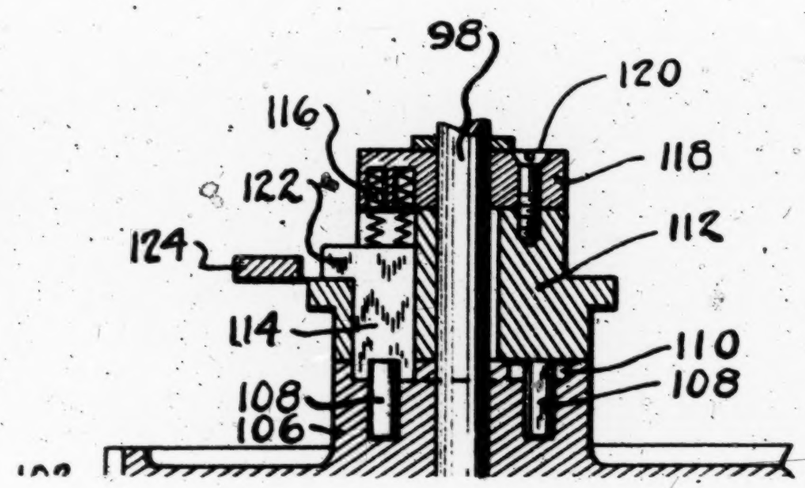


Fig 9



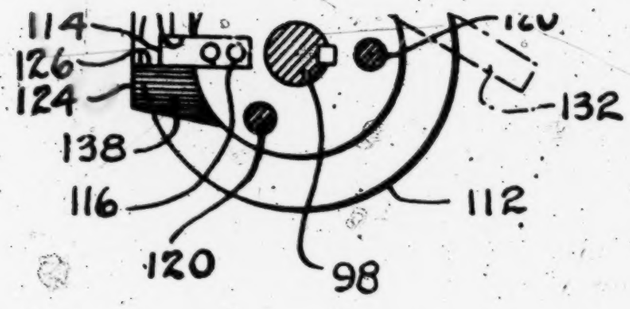


Fig 8

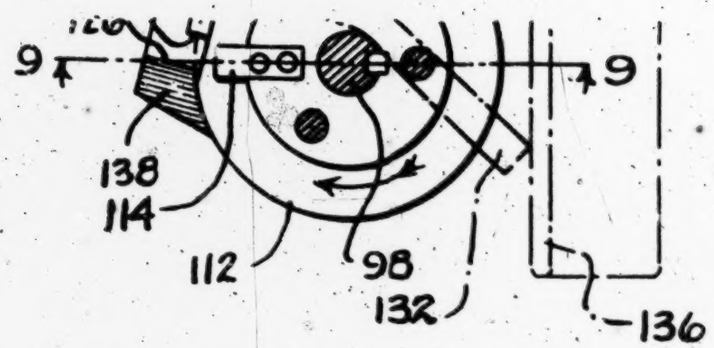


Fig 9

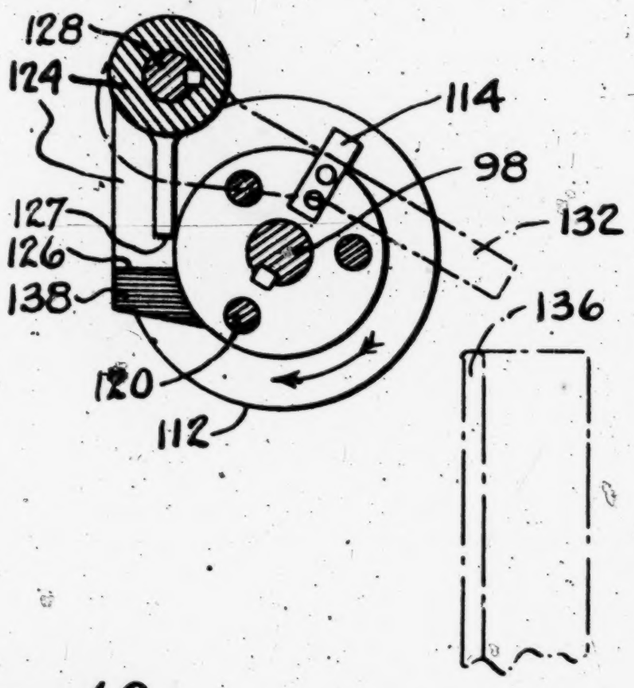
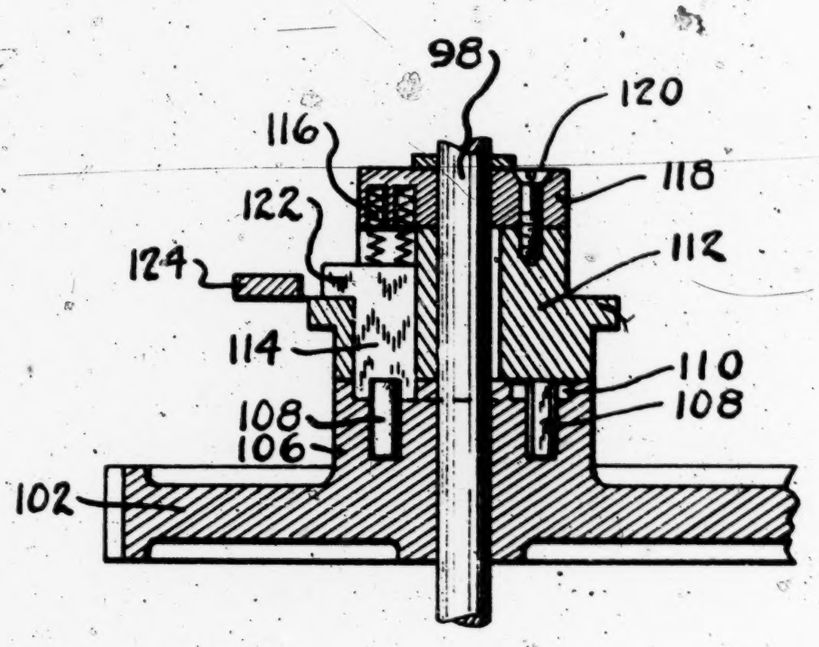
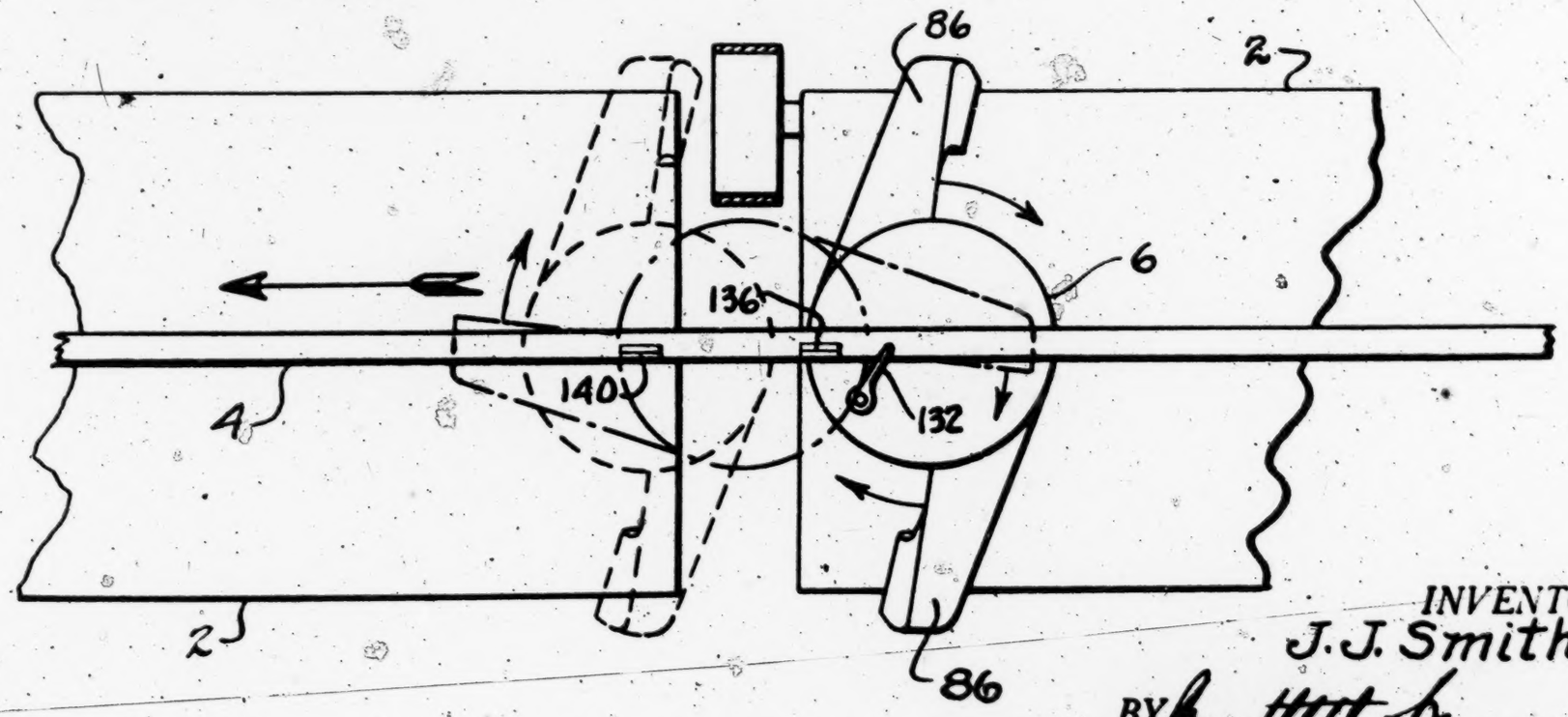


Fig 10





INVENTOR.
J. J. Smith
BY Bartlett & Mawicz
ATTORNEYS.

May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 6

Fig 11

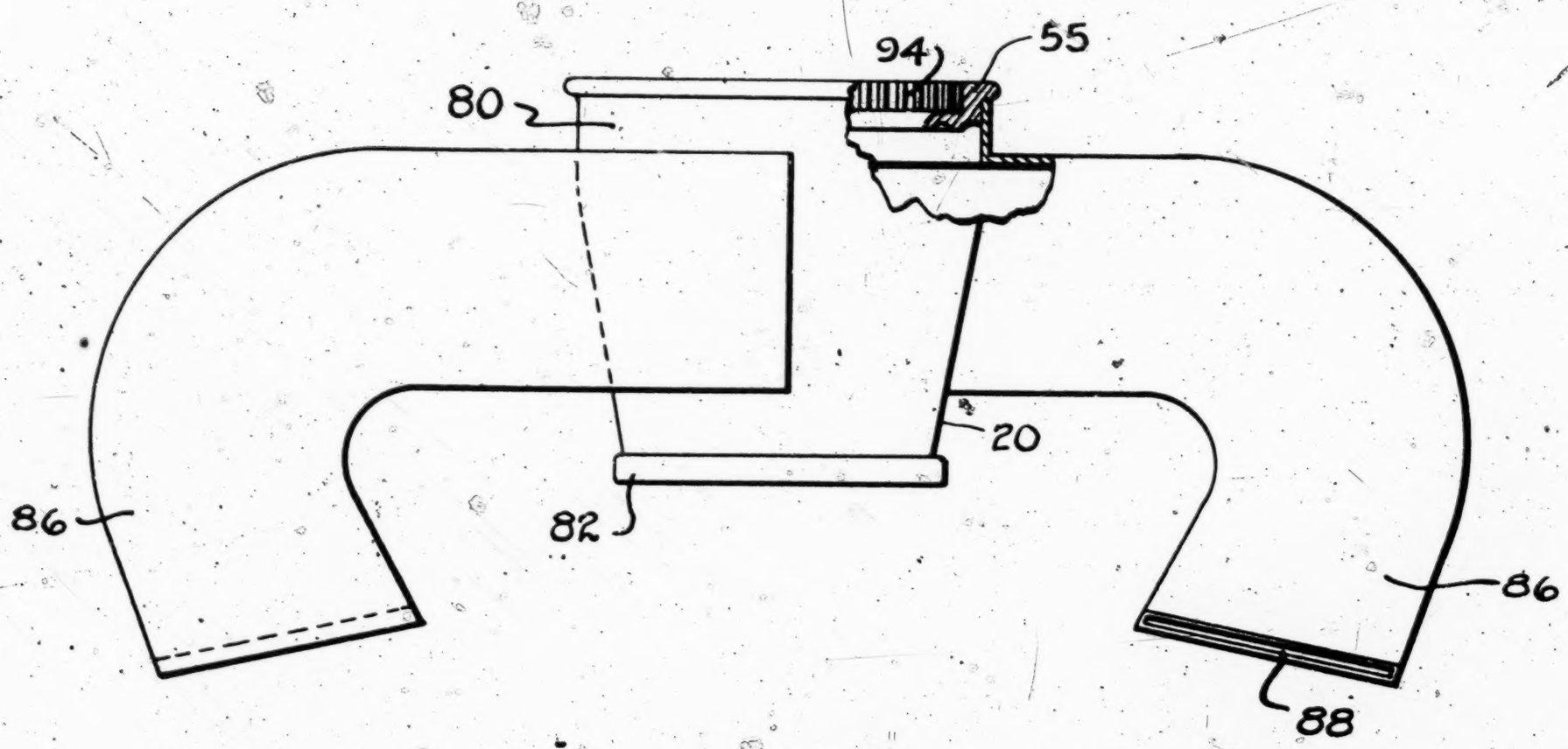
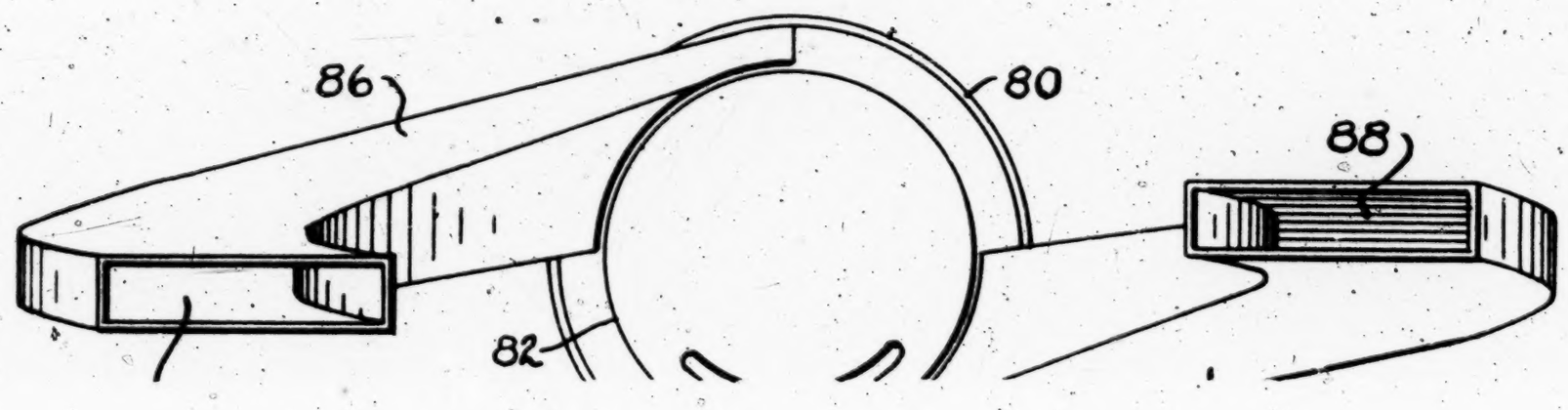


Fig 12



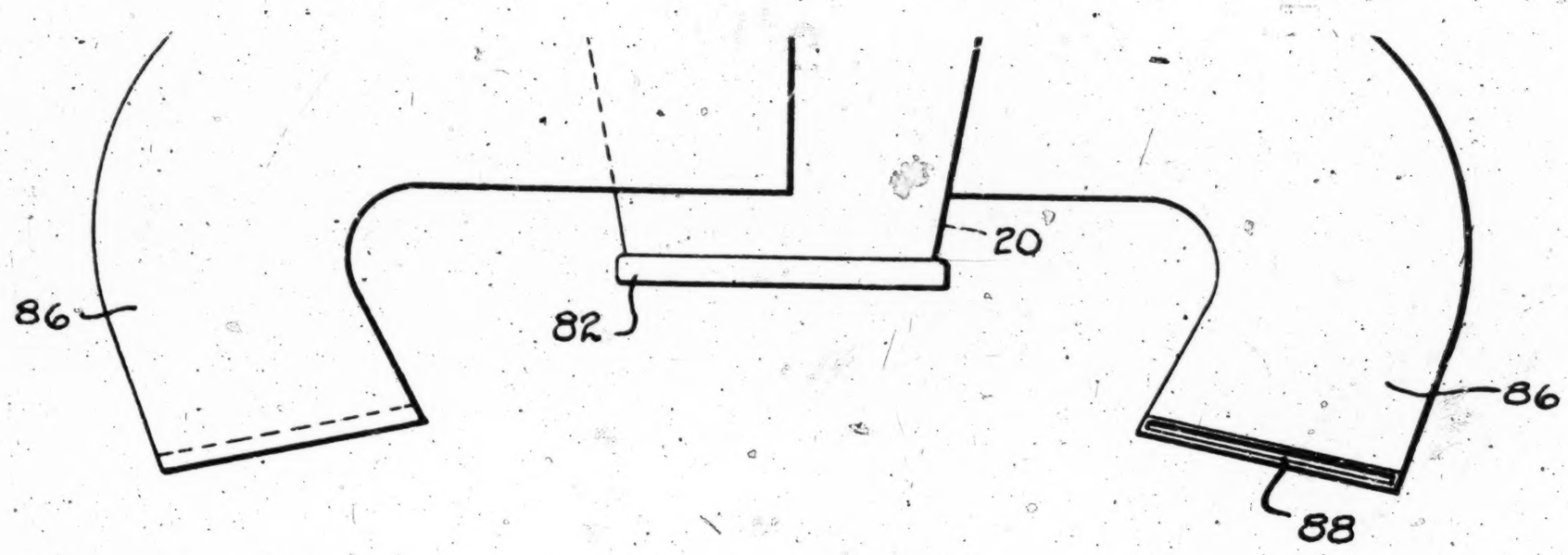


Fig 12

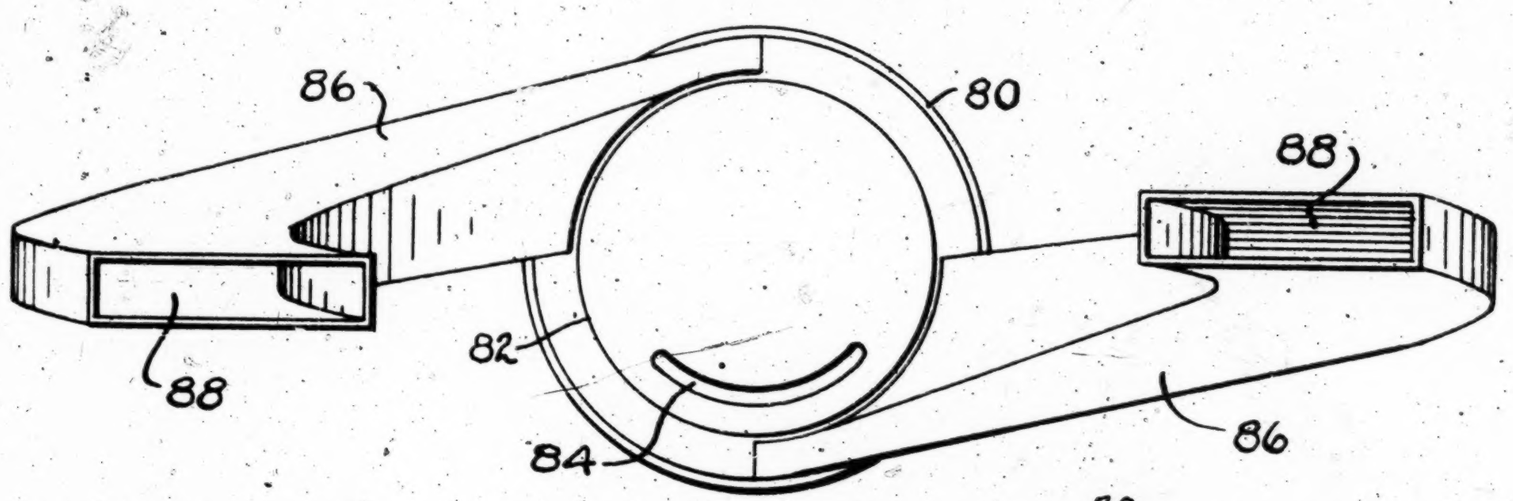
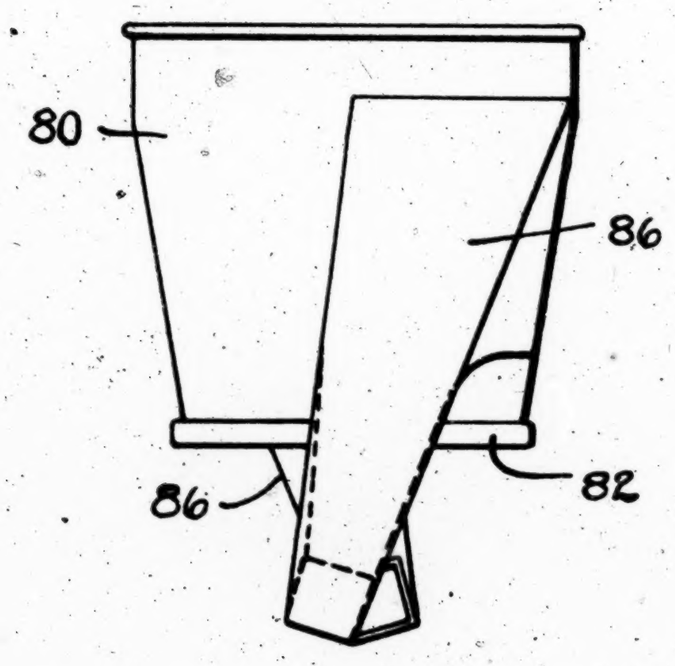


Fig 13



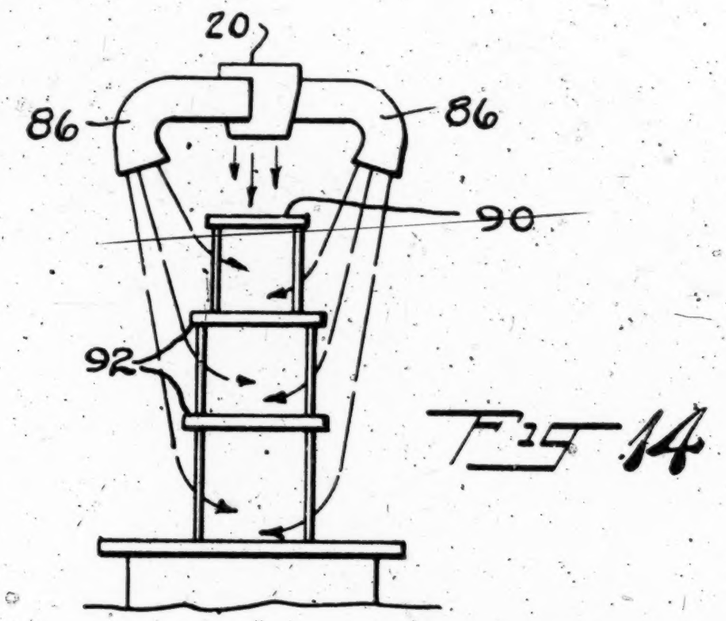


Fig 14

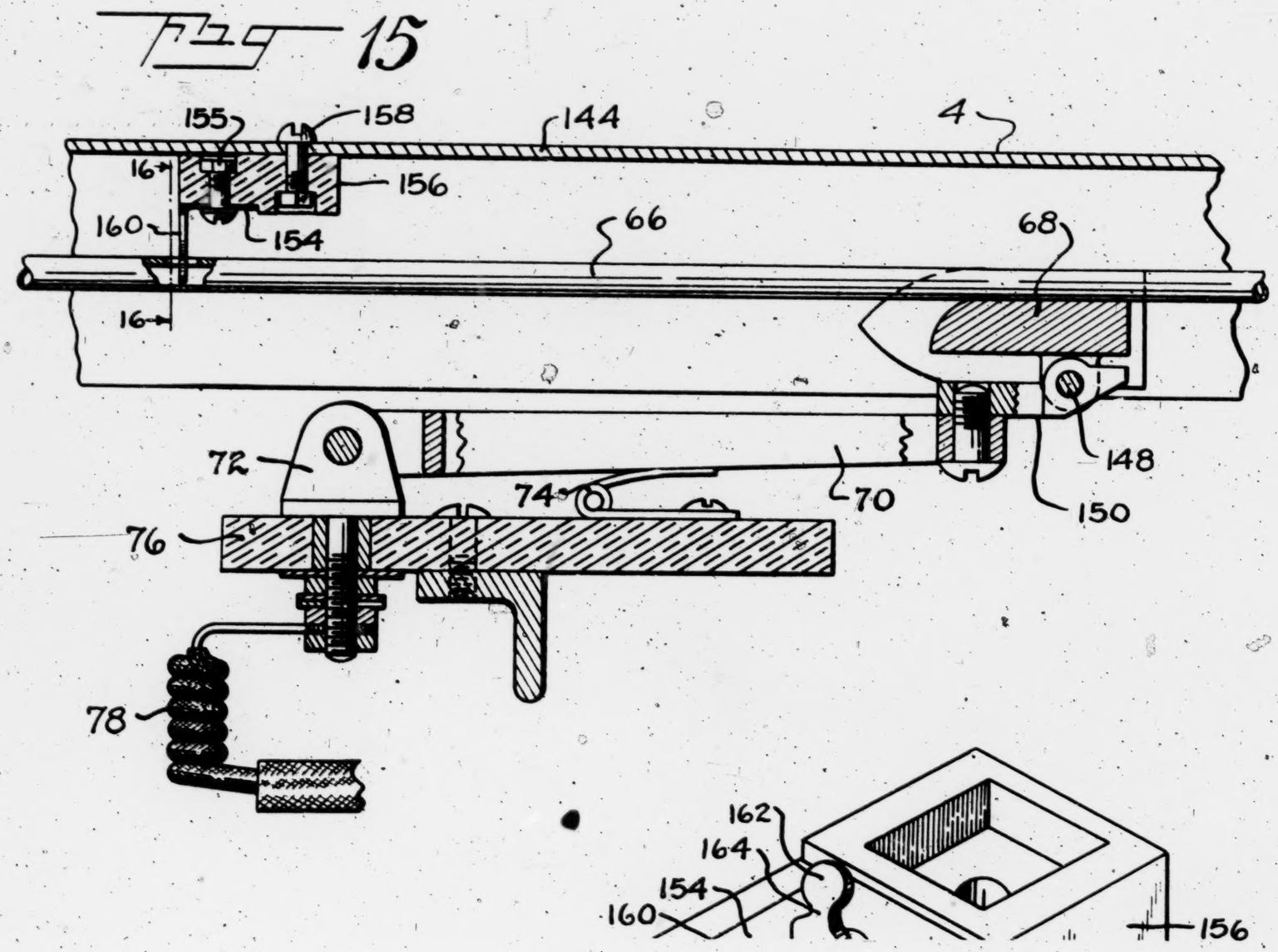
INVENTOR.
J. J. Smith
BY Bartlett Monroe
ATTORNEYS.

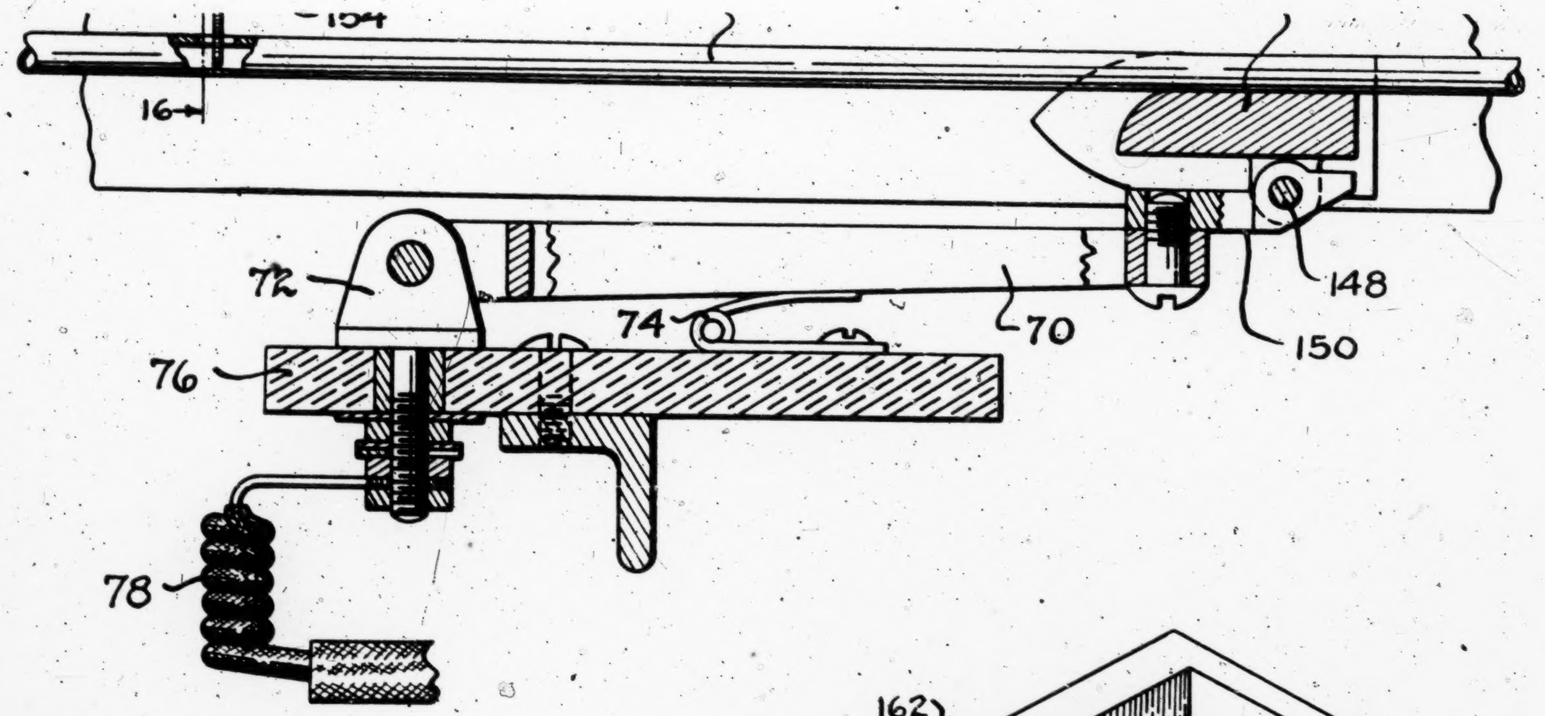
May 10, 1932. J. J. SMITH 1,857,410

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Filed Sept. 21, 1926 7 Sheets-Sheet 7

Fig 15





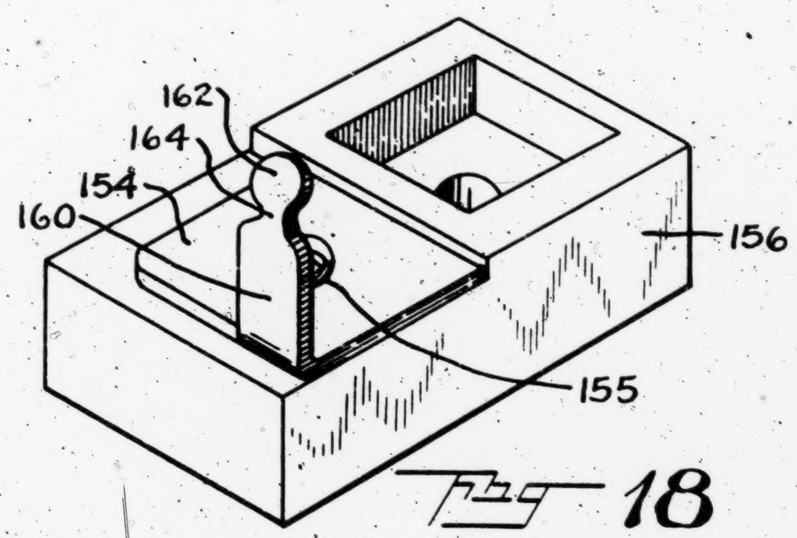


Fig 18

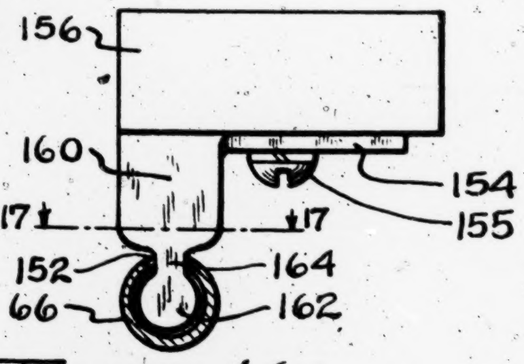


Fig 16

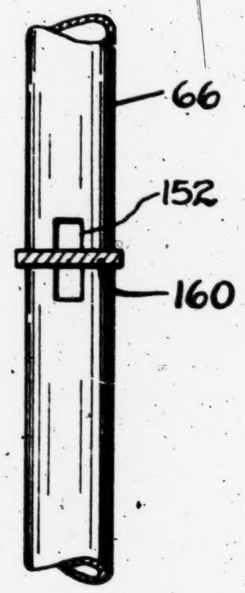


Fig 17

INVENTOR.
J. J. Smith
BY Bartlett & Brownell
ATTORNEYS.

Patented May 10, 1932

1,857,410

UNITED STATES PATENT OFFICE

JOSEPH J. SMITH, OF CAMBRIDGE, MASSACHUSETTS; WILLIAM J. SMITH, EXECUTOR OF SAID JOSEPH J. SMITH, ASSIGNOR TO FIRTH-SMITH COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

APPARATUS FOR OPERATING ON SPINNING FRAMES AND OTHER MACHINES

Application filed September 21, 1926. Serial No. 136,772.

My invention relates to apparatus for operating upon spinning frames and other machines, and has special reference to apparatus which are adapted to direct air downwardly over the machines of a plurality of rows successively for the purpose of forcing loose fibers, lint and dust away from the work and toward the floor.

One of the objects of the invention is to provide a novel and improved apparatus of this character.

Apparatus of this character are provided with a relatively wide air directing means which travels widthwise so as to direct air downwardly over the machines throughout their width, and in order for such air directing means to pass driving belts and other obstructions in its path it is frequently necessary for it to be turned so as to travel endwise as it passes the obstructions. Another object of the present invention is to provide novel and improved means in an apparatus of this character for thus changing the position of the air directing means.

Another object of the invention is to provide novel and improved air directing means for an apparatus of this character.

Another object of the invention is to provide novel and improved means for supporting a tubular electrical conductor, which is particularly adapted for use in supporting the trolley wires for energizing the electric motor which is used in driving an apparatus of this character.

The several features of the invention whereby the above mentioned and other objects may be attained, will be clearly understood from the following description and accompanying drawings, in which:

Figure 1 is a transverse sectional view, partly in elevation and partly broken away, of an apparatus embodying features of the invention in their preferred form, the section being shown as taken on the line 1—1 of Fig. 2;

Fig. 2 is a side elevation on an enlarged scale of the upper portion of the apparatus;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a detail sectional view, taken on the line 4—4 of Fig. 3;

Fig. 5 is a sectional plan view taken on the line 5—5 of Fig. 2;

Fig. 6 is a detail sectional plan view taken on the line 6—6 of Fig. 3;

Figs. 7 and 8 are views similar to Fig. 6, but showing certain parts in different positions;

Fig. 9 is a sectional view taken on the line 9—9 of Fig. 7;

Fig. 10 is a plan view, partly diagrammatical, of the apparatus shown as operating upon a plurality of spinning frames or other machines, the air directing means of the apparatus being shown by full lines in one position and by broken lines in two other positions;

Fig. 11 is a detail side view, partly in section, of the air directing means of the apparatus;

Figs. 12 and 13 are bottom plan and end views, respectively, of the same;

Fig. 14 is a diagrammatical end view showing the air directing means of the apparatus operating upon a spinning frame or similar machine;

Fig. 15 is a longitudinal sectional view taken on the line 15—15 of Fig. 3, illustrating particularly the means for supporting the trolley wires through which the electric motor that drives the apparatus is energized;

Fig. 16 is a detail sectional elevation taken on the line 16—16 of Fig. 15;

Fig. 17 is a sectional plan view taken on the line 17—17 of Fig. 16; and

Fig. 18 is a detail view in perspective of one of the component parts of the trolley wire supporting means.

The apparatus illustrated in the drawings is of the type of the one described and claimed in the patent to William B. Walker, methods of and apparatus for operating on spinning frames and other machines, No. 1,781,142, dated November 11, 1930. This apparatus is particularly adapted for use in operating upon spinning frames, indicated at 2 in Fig. 10, which are usually arranged in parallel rows with the frames of each row arranged end to end. The apparatus is pro-

vided with an endless track 4 which extends centrally over the machines of each row. The air impelling device or blower 6 is mounted to travel along the track by power-operated means, so as to operate successively upon the machines of each row and upon the several rows of the machines successively, so that each machine is operated upon at predetermined intervals. The air impelling device or blower 6 is provided with a carriage having flanged wheels or sheaves 12 and 14 mounted upon the track, and is further provided with a fan 16 and an electric motor 18 having its shaft 19 arranged vertically. The motor 18, through suitable connections hereinafter described, drives the sheaf 12 so as to propel the blower along the track, and also drives the fan 16. The fan 16 and motor 18 are enclosed by a sheet metal casing 20 hereinafter described which is provided with suitable discharge orifices for directing currents of air downwardly over the spinning frames. The driving sheaf 12 is secured on one end of a horizontal shaft 26 which extends through and is journaled in suitable roller bearings in the bifurcated upper end of a vertically arranged post or hanger 28 forming a part of the blower carriage. The connection between the sheaf shaft 26 and the motor shaft 19 comprises a vertical shaft 30 which extends through a suitable bearing in the post or hanger 28, and has its upper end operatively connected with the shaft 26 through bevel gears 32. The lower end of the vertical shaft 30 carries a spur gear 34 which is operatively engaged by a pinion 36 secured on the upper end of a vertical shaft 38 that extends through and is journaled in a suitable bearing in a depending post or hanger 40 cast integral with the post or hanger 28. The vertical shaft 38 is in axial alinement with the motor shaft 19, and is connected therewith by means of a flexible coupling 42. The electric motor is supported on the hanger 40 by means of a suitable spider 44 which has its hub secured by a set-screw 46 to said hanger. The spider is provided with an outer annulus or rim 48 which is connected with the hub by a series of four radial arms 50, and is further provided with depending bracket arms 52 that are connected at their lower ends by an annulus 53 which supports lugs 54 projecting from the motor casing, the lugs being secured to the annulus 53 by bolts 56.

The upper annulus 48 of the spider supports the nozzle casing 20. To provide for this an annular member 55 is secured to the inside of the upper end of the casing and is provided with a horizontal inwardly directed flange 57 that extends over the outer portion of the annulus 48. The flange 57 and annulus 48 are provided with opposed annular grooves forming a raceway for ball bearings 59 so that the nozzle casing may be turned or swiveled about a vertical axis as hereinafter described.

The fan 16 is of suitable construction so as to direct the air downwardly through the casing 20. As shown, this fan is provided with a hub 60 which is secured on the upper end of the motor shaft 19, and is further provided with suitably formed blades 62 that are connected at their lower ends to an outwardly and downwardly flaring web 64 projecting from the fan hub 60.

To energize the electric motor 18, trolley wires 66 are mounted at opposite sides of the track 4. These trolley wires are engaged by trolleys 68 which are mounted on the free ends of arms 70 pivotally mounted on the upper ends of binding posts 72. Each trolley 68 is held upwardly in engagement with its wire by means of a suitably arranged spring 74. The binding posts 72 extend downwardly through apertures in a plate 76 of insulating material and are suitably secured therein. The lower ends of the binding posts 72 are electrically connected with the motor by means of conductors 78.

With this construction it will be apparent that upon the current through the trolley wires being turned on, the motor shaft will drive the fan, and also through its connection with the sheaf 12 will propel the blower continuously along the endless track and thus will cause the air from the blower to be directed successively over the machine of each row and over the several rows of machines successively.

Except as hereinafter described, the parts of the apparatus above referred to may be and preferably are the same as the corresponding parts of the apparatus illustrated and described in said patent to William B. Walker.

In my improved apparatus as illustrated in the drawings, the air directing casing 20 is so constructed as to cause the air to most effectively act upon the spinning frames or other machines (Figs. 11, 12 and 13). As shown, this casing is provided with a cylindrical portion 80 which closely surrounds the sides of the supporting frame for the motor and fan, and tapers downwardly slightly and has its lower end closed by a horizontal cover 82 which is spaced a distance below the lower end of the motor. This cover is provided with a centrally located arcuate slot 84 forming an air discharge orifice.

The casing 20 is further provided with laterally projecting arms 86 having their inner ends arranged opposite the fan, and having their outer end portions inclined downwardly and inwardly. The opposite sides of each arm are inclined toward each other so as to provide a relatively long and narrow discharge orifice 88. The inner ends of the arms 86 are arranged at opposite sides of a vertical transverse diametrical plane of the

cylindrical portion 80, and the outer ends of the arms are arranged at opposite sides of said plane so as to position the orifices 88 one in advance of the other.

With this construction, viewing Fig. 14, it will be apparent that the centrally located discharge orifice 84 will direct a current of air of suitable width downwardly upon the top shelf 90 of a spinning frame or other machine, and the discharge orifices 88 in the ends of the lateral arms of the casing will direct currents of air downwardly and inwardly over the sides of the machine. By arranging the lateral arms 86, as above described, with the orifices 88 arranged one in advance of the other, it will be apparent that the currents of air directed by the two arms, instead of meeting at the center of the shelves 92 of the spinning frame, or corresponding parts of other machines, pass each other and thus each will be free to sweep any deposits of dust or lint completely across the shelf and over the opposite edge of the shelf. With this arrangement of lateral air directing arms, all of the spindles or bobbins of the spinning frame, where the apparatus is used in connection with spinning frames, may be effectively operated upon.

Spinning frames and other machines are frequently driven by belts which pass over driving pulleys adjacent one end of the machines and over pulleys located a distance above the machines. In order for the relatively wide air directing means or nozzle casing 20 to pass by these belts or other obstructions in its path, it is necessary to turn the casing so as to cause it to pass endwise by the obstruction, and then after passing the obstruction to be returned to its initial position so as to operate properly on the next machine which it approaches. In my improved apparatus as illustrated in the drawings, the means for thus changing the position of the casing 20 comprises connections between the casing and the counter-shaft 30 through which the carriage wheel 12 is driven. This connection comprises a clutch which is adapted to be automatically controlled so that as the nozzle casing approaches the belt or other obstruction, it is caused to turn 90 degrees in one direction to position it endwise, and is maintained in that position until it substantially passes the obstruction when it is further turned 90 degrees in the same direction so as to return it to its normal widthwise position (Fig. 10). By thus turning the nozzle casing it will be apparent that the casing may closely approach one side of the obstruction, and then as it passes the obstruction may be repositioned widthwise close to the opposite side of the obstruction, which is advantageous as it permits the casing to properly position itself after passing a belt at one end of a machine before it reaches the opposed end of the next succeeding machine, thus insuring each machine being operated upon uniformly throughout its length.

As shown, the connection between the nozzle casing 20 and the counter-shaft 30 comprises an internal spur gear 94 which is formed on the supporting annulus 55 of the casing. This gear 94 is engaged by a spur gear 96 secured on the lower end of a vertical shaft 98, which is mounted to turn in roller bearings 100 secured on suitable brackets to the carriage frame. A large spur gear 102 is loosely mounted on the shaft 98 and is continuously driven by a pinion 104 secured on the shaft 30 that drives the carriage wheel 12. The shaft 98 is adapted to be connected with the gear 102 so as to be driven thereby by means of a one revolution clutch, the driving member of which is formed on the hub 106 of the gear 102 and comprises a series of pins 108 carried by the hub 106 and having their upper ends projecting into an annular groove 110 in the upper face of the hub. The driven member 112 of the clutch is secured to the shaft 98, and a detent 114 is mounted to slide in a vertical slot in the driven member. This detent is pressed downwardly by means of coiled springs 116 having their lower ends bearing on the upper end of the detent and their upper ends set in sockets in a cap or collar 118 which is secured by screws 120 to the upper end of the driven member 112. The upper end of the detent 114 is provided with an outwardly projecting tongue 122. During the normal operation of the apparatus with the nozzle casing 20 arranged widthwise of the machine, the tongue 122 rests upon the end of an arm 124 so as to position the lower end of the detent above the clutch pins 108, the tongue being held between shoulders 126 and 127 on the arm so as to positively hold the nozzle casing 20 in position (Fig. 2). The arm 124 is secured on the lower end of a rock-shaft 128 which extends through a vertical bearing 130 on the carriage frame. An arm 132 is secured on the upper end of the rock-shaft 128, and a coiled spring 134 is connected with this arm so as to tend to turn the rock-shaft 128 in a direction to hold the arm 124 inwardly against the driven member 112 of the clutch. An abutment plate 136 is secured on the track 4 in the path of the free end of the arm 132 and in proper position with relation to the belt or other obstruction in the path of the blower so that as the blower approaches the obstruction, the arm by engagement with the abutment plate is caused to swing in a direction to turn the rock-shaft 128 in a direction to swing the arm 124 outwardly from beneath the tongue 122 of the detent 114. When the detent 114 is thus released the springs 116 thereof force it downwardly into the path of one of the clutch pins 108, whereupon the pin

by engagement with the lower end of the detent establishes driving connection between the gear 102 and the vertical shaft 98, which acts through the spur gear 96 and the internal gear 94 to turn the nozzle casing 20. The abutment plate 136 is of suitable length so that the arm 124 is held away from the driven member 112 of the clutch a sufficient length of time to insure the detent 114 dropping down into position to be engaged by one of the clutch pins 108, but before the driven member of the clutch has made one complete revolution, the arm 132 rides off of the abutment plate 136 and the coil spring connected with the arm acts through the rock-shaft 128 to swing the arm 124 inwardly so as to position its end in the path of the tongue 122 of the clutch detent. The free end of the arm 124 has an inclined face 138 so that upon engagement of the tongue of the detent with this inclined face, the tongue rides up on said face and snaps into locking position between the shoulders 126 and 127, thus throwing out the clutch and positively arresting the rotary movement of the nozzle casing. The gearing connection between the shaft 98 and the nozzle casing is such that upon each complete rotation of the driven member of the clutch, as above described, the nozzle casing is turned 90 degrees which changes the position of the casing from its widthwise to its endwise position. As the blower passes the belt or other obstruction, the end of the arm 132 engages a second abutment plate 140 which causes the arm to be swung in a direction to retract the arm 124 and thus permit the clutch to be thrown in so as to further rotate the nozzle casing 90 degrees to return it to its normal widthwise position, whereupon the clutch is again thrown out and the nozzle casing is held in this position by the engagement of the tongue of the clutch detent 114 between the locking shoulders on the arm 124.

Thus it will be apparent, by suitably positioning the abutment plates 136 and 140 adjacent opposite sides of the belt or other obstruction in the path of the blower, that the nozzle casing as it approaches close to the obstruction will be turned 90 degrees so as to position it endwise and as it passes the obstruction it will again be turned 90 degrees in the same direction so as to return it to its normal widthwise position, and that when it is in normal position it will be positively held from any turning movement, until the clutch is again thrown in.

In the apparatus illustrated in the drawings, the track upon which the blower runs comprises a steel strip 142, to the opposite sides of which are secured sheet metal members 144 which have their upper edges projecting a distance beyond the upper edge of the strip 142 and are bent outwardly and downwardly to form a substantially flat supporting surface for the flanged carriage wheels or sheaves 14. The lower portions of the sheet metal members 144 are bent outwardly horizontally and then downwardly, their lower edges being substantially in the plane of the lower edge of the strip 142. These lower portions of the members 144 cooperate with the lower portion of the strip 142 to form downwardly opening compartments or channels for the trolley wires 66, and preferably the walls of these channels are coated with insulating paint or other material.

The carriage frame is provided with a laterally projecting roller 146 (Figs. 2 and 5) which is secured on a bracket arm projecting from the carriage frame, and extends beneath the lower edges of the steel supporting strip 142 and the sheet metal members 144, the roller being spaced a slight distance beneath said edges. This roller 146 serves to prevent the carriage wheels from jumping off the track, and also obviates any danger of the trolley supporting arm or any other part of the apparatus striking the trolley wires.

Each of the trolleys 68 (Fig. 15) is in the form of a grooved shoe which is pivotally mounted on a horizontal pin 148 on one end of an arm 150 which is pivotally mounted to turn about a vertical axis on the rear end of the trolley supporting arm 70, such mounting of the trolley shoe permitting it to readily adjust itself to the trolley wire.

It has been a serious problem in apparatus of this character to properly support the trolley wires so as to obviate any danger of sparking. As these apparatus are used in spinning rooms and other parts of a textile mill where there is more or less cotton fiber or lint floating in the air, any sparking occurring between the trolleys and trolley wires would be objectionable. It has been found that no support for the trolley wires would be suitable which caused any projection on the trolley wires that might be engaged by the trolleys, as such projection would be liable to cause sparking, it being very essential that the surface of the wires engaged by the trolleys shall be smooth and uninterrupted. The means illustrated in the drawings for supporting the trolley wires has been found very satisfactory and to meet all requirements. As shown, the trolley wires are of tubular form, and at the points where it is desired to support them, each is provided with an elongated slot 152 in the top thereof. The support for each wire comprises a member of sheet metal having a horizontal base portion 154 which is secured by a screw or bolt 155 to the under side of a block 156 of insulating material that is secured to the under side of the horizontal lower portion of the sheet metal member 144 by means of a screw or bolt 158. A tongue

160, integral with the base portion 154, extends downwardly therefrom and its lower end is provided with a substantially circular head 162 and a reduced neck portion 164. The circular head 162 is of slightly less diameter than the inner diameter of the tubular conductor 66, and the neck portion 164 is of slightly less width than the width of the slot 152, so as to permit the head 162 to be inserted through the slot 152 and then turned to position it cross-wise of the conductor, with the neck portion 164 extending across the slot 152. The tongue 160 is located at one side of the longitudinal center line of the block 156 so as to permit the block to be positioned against the side of the track supporting strip 142 with the conductor centrally located between the strip and the adjacent depending portion of the sheet metal member 144, and also to permit the bolt 158 to be readily inserted to secure the block in position after the tongue 160 has been inserted in the tubular conductor and turned so as to position it in holding position.

By utilizing a suitable number of these supports for each conductor, it will be apparent that the conductor may be securely held. The circular head 162 which substantially fits the inner wall of the conductor and the neck portion 164 which is of substantially the width of the slot 152, securely holds the conductor in proper position. Also the elongated slots 152 permit the conductor to be mounted without accurate adjustment of the parts of the supports with relation to the slots in the conductor, and also they permit a certain amount of longitudinal movement of the conductor to take care of expansion and retraction. It will also be apparent that the parts of the supports for the conductors are well out of the path of the trolleys so that there is no danger of the trolleys striking them.

As will be evident to those skilled in the art, my invention permits various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. Apparatus of the class described having, in combination, an overhead track, a blower mounted to travel along the track, relatively wide air directing means for said blower to direct air downwardly normally extending transversely of the direction of travel of said blower, and means for turning said air directing means in one direction to cause it to extend longitudinally of said direction of travel so as to permit it to clear an obstruction in its path and for further turning it in the same direction to return it to its normal position as it passes said obstruction.

2. Apparatus of the class described having, in combination, an overhead track, a blower mounted to travel along the track, air directing means associated with said blower for directing air downwardly as the blower travels along the track, and means for turning said air directing means in one direction about a substantially vertical axis at a predetermined point in its travel, maintaining it in the position turned for a predetermined distance, and then further turning it in the same direction to return it to its initial angular position, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

3. Apparatus of the class described having, in combination, an overhead track, a blower mounted to travel along the track, air directing means associated with said blower for directing air downwardly, means for turning said air directing means in one direction about a substantially vertical axis substantially 90 degrees at a predetermined point in its travel, maintaining it in the angular position thus turned for a predetermined distance and then turning it substantially another 90 degrees in the same direction, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

4. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track, a blower mounted on said carriage, air directing means associated with said blower for directing air downwardly, an electric motor mounted on the carriage, connections between the motor shaft and said air directing means for turning said means about a substantially vertical axis, and means for rendering said connections operative and inoperative at predetermined intervals to thus turn said air directing means, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

5. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track, a blower mounted on said carriage, air directing means associated with said blower for directing air downwardly, an electric motor mounted on the carriage, connection with the shaft of said motor for driving the carriage along the track, connection between the shaft of said motor and said air directing means for turning said means about a substantially vertical axis, and means for rendering said last-mentioned connection operative and inoperative at predetermined points in the travel of said carriage to thus turn said air directing means, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

6. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track, a blower mounted on said carirage, air directing means associated with said blower for di-

recting air downwardly, an electric motor mounted on the carriage, connection with said motor shaft for driving the blower, connection with said motor shaft for driving said carriage along the track, connection between said motor shaft and said air directing means for turning said means about a substantially vertical axis, and means for rendering said last-mentioned connection operative and inoperative at predetermined points in the travel of said carriage to thus turn said air directing means, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

7. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track, a blower mounted on said carriage, air directing means associated with said blower for directing air downwardly, an electric motor mounted on the carriage, connections between the motor shaft and said air directing means for turning said means about a substantially vertical axis, comprising a clutch having a control element acting when moved in one direction to render said connections operative to turn said air directing means, and a member arranged in the path of said control element for causing said element upon engagement therewith to be moved in said direction, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

8. Apparatus of the class described having, in combination, an overhead track, a carriage mounted to travel along the track, a blower mounted on said carriage, air directing means associated with said blower for directing air downwardly, an electric motor mounted on the carriage, connections between the motor shaft and said air directing means for turning said means about a substantially vertical axis, comprising a clutch having a control element acting when moved in one direction to render said connections operative to turn said air directing means and when moved in the opposite direction to render said connections inoperative, a member arranged in the path of said control element for causing said element upon engagement therewith to be moved in said first-mentioned direction, and means for moving said element in the opposite direction upon passing said member, the air directing means being longer in the direction transverse to the track than in the direction parallel to the track.

9. Apparatus for operating upon a spinning frame or other machine having, in combination, an overhead track, a blower mounted on the track to travel over the machine, and air directing means associated with said blower having a discharge orifice for directing air downwardly over the top of the machine and having laterally arranged discharge orifices suitably inclined to direct air downwardly and inwardly over the sides of the machine.

10. Apparatus for operating upon a spinning frame or other machine having, in combination, an overhead track, a blower mounted on the track to travel over the machine, and air directing means associated with the blower having laterally arranged discharge orifices suitably inclined to direct air downwardly and inwardly over the sides of the machine.

11. Apparatus for operating upon a spinning frame or other machine having, in combination, an overhead track, a blower mounted on the track to travel over the machine, and air directing means associated with the blower having laterally arranged discharge orifices suitably inclined to direct air downwardly and inwardly over the sides of the machine, said orifices being out of alinement to each other so as to direct separate currents of air, one past the other.

12. Apparatus for operating upon a spinning frame or other machine having, in combination, an overhead track, a blower mounted on the track to travel over the machine, and air directing means associated with the blower having laterally arranged discharge orifices suitably inclined to direct air downwardly and inwardly over the sides of the machine, said orifices being arranged one in advance of the other during the normal travel of the blower so as to direct separate currents of air past each other.

13. Apparatus for operating upon spinning frames or other machines arranged in a row having, in combination, an overhead track, a blower mounted on the track to travel over the machines in the row, and air directing means associated with the blower comprising a central casing having an orifice for directing air downwardly over the tops of the machines, and arms extending laterally from said casing having orifices in their ends suitably arranged to direct air downwardly and inwardly over the sides of the machines.

14. Apparatus for operating on spinning frames or other machines having, in combination, an overhead track, a blower mounted on the track to travel over the machines, and air directing means associated with the blower having discharge orifices arranged laterally with relation to the normal path of travel of the blower for directing air downwardly and inwardly over the sides of the machine, said orifices being out of alinement to each other so as to direct separate currents of air past each other.

In testimony whereof, I have signed my name to this specification this 2nd day of September, 1926.

JOSEPH J. SMITH.

MEMORANDUM DECISION.

(Filed January 7, 1957.)

WARLICK, *District Judge.*

This is a patent suit in which infringement is charged in the usual form. The defenses likewise are the customary ones of invalidity and non-infringement. Plaintiff's action charges the defendant with the infringement of Claim 6 of United States Letters Patent No. 2,524,797, which issued on October 10, 1950 to it as the assignee of Grover B. Holtzclaw, the inventor. The patent rights are wholly owned by plaintiff.

Plaintiff is a corporation organized under the laws of Massachusetts, being engaged in the business of designing, manufacturing, and selling and installing various articles of textile machinery, and designs, manufactures and sells travelling cleaners for such machinery. It maintains a regular established place of business in Charlotte, in the Western District of North Carolina.

The defendant is an Ohio corporation and is similarly engaged in the business of designing, manufacturing and selling various types of machinery, including travelling cleaners for many textile machines. For many years it has maintained a place of business in Charlotte and does considerable business in North Carolina.

Jurisdiction arises under the patent laws of the United States.

In its answer the defendant alleges the invalidity of said Letters Patent No. 2,524,797 issuing to the plaintiff as assignee of Holtzclaw on the grounds of anticipation, prior public knowledge, use and sale, lack of patentable invention and failure of Claim 6 of the patent to point out with particularity the invention as required by 35 U. S. C. A. 112; It likewise denies infringement of Claim 6 of said patent.

Plaintiff has been engaged in the business of designing and manufacturing traveling cleaners for textile machines for approximately thirty years. One among the big problems involved in the manufacture of textile fabrics and

yarns from cotton and other similar short staple fibers is the collection of lint which sheds rapidly during the manufacturing operations. It seems to collect on all types of textile machines, particularly spinning and weaving frames,—very often forms into bunches, frequently becomes caught in the yarns as they are being drawn, spun, wound, and woven, causing all sorts of imperfections in the yarn and spun fibers. Breaks frequently occur which makes piecing and splicing necessary, and naturally results in much damage to the product.

One among the major items in the cost of textile manufacturing is keeping textile machines, room surfaces, and material being used, as free from lint as possible. In spinning this is an important item. Prior to 1926 when the first travelling cleaner was placed on the market the cleaning of spinning frames and looms was done by hand. The lint would be wiped or brushed off by the operator or blown away by manually using some sort of compressed air gun,—a slow, tiresome and expensive operation and one that had plagued the industry since machines came into use. Around 1926 travelling cleaners running continuously on a track located above the row of textile machines such as spinning frames, winders, twisters, warpers and looms, were manufactured and placed on the market. These cleaners as installed and geared up, and when in use, resulted in blowing away the accumulated lint at regular intervals.

This heralded an advance in the manufacture of cotton goods and reflected a considerable saving to the trade. These travelling cleaners were developed from year to year as man's ingenuity was put into practical effect and as new thoughts added something to the older art. Blowers operating on an overhead trackway over rows of textile machines and used to clean them were consequently old art long before the patent in suit."

The patent of Walker, No. 1,781,142 was filed for in 1925. The Lytton patent, No. 2,011,770 was filed a year or two thereafter. These cleaners consisted of, as do all of such machines, a motor driven carriage operating on a

track placed above the machine, ordinarily being affixed to the ceiling overhead, and consists of a fan, a casing therefor, and rigid outlets likewise being placed above the machines and over the heads of the operators, through which outlets air from the fan's operation was directed downwardly toward the machines. They were all right as far as they went, but each, up until the patent in suit, was limited in its cleaning and failed to operate upon many surfaces of the machine, particularly those not in a direct line of the air outlet.

A spinning frame invariably consists of at least three creel boards, as such is known in the trade,—called a bottom, a middle and a top creel board. The exhibits offered in evidence fully reflect the appearance of a spinning frame, loom, etc., and easily show the various parts of such machines. Since the air outlets were directed downwardly, each in its operation would fail to clean underneath the creel boards and in the underframe area. This resulted in the operator spending much of his time in hand cleaning the machines, which he operated.

During the years that followed many men skilled in the art of textile cleaning were continuously undertaking to devise some means for cl. ning the lint from the various surfaces of such machines no. leaned by the machines of the Walker and Lytton types. These undertakings are best illustrated by the Smith patent, No. 1,920,768 the three patents issuing to W. B. Hodge, numbered 2,047,558, 2,063,873, and 2,063,874, and others issuing to Lawrence and Moore, etc. These patented devices were an improvement over the first patents, but proved ineffective, and the industry was continually on the look out for and in need of workable improvements.

The defendant actively had a part in the efforts to bring about a solution to this cleaning problem, and through its ownership of the Miller and Becker patent, No. 2,516,475, and other types of cleaners offered to the industry a motorized equipment operating on a track suitable for cleaning the under portion of the spinning frame.

These evidently were not entirely successful and did not prove commercially competitive to the patent in suit.

Being confronted with the constant demand of textile manufacturers plaintiff's research director, George B. Holtzclaw, began a study of the problem from a practical angle and finally hit upon the idea of making use of extended air outlets which would make it possible to deliver air currents of the proper volume and needed velocity to the right places and in the proper direction. Such outlets to be made of a flexible type of material in order to yield if they should come in contact with the machine operator, or any other obstruction as the cleaner travelled on the overhead frame. The air vents on the extended flexible nozzle or sleeve would make it possible to clean any area of a spinning frame or other machine which theretofore the travelling cleaners had failed to reach, and through the flexible sleeve or nozzle the textile worker was protected from injury. Having conceived of this idea he made application for a patent on December 12, 1947 and on October 10, 1950, plaintiff, as assignee of Holtzclaw, was issued the patent in suit.

Claim 6 of the patent, and this is the claim on which plaintiff bases its action, is as follows:

> "6. The combination with a traveling cleaner, for blowing lint, dust, and other foreign particles from longitudinally alined machines having a trackway disposed above and longitudinally centrally of said machines said cleaner having a motor driven carriage and fan with means operable by said motor for propelling the carriage along the trackway and for rotating said fan, and a fan casing enclosing the fan having an inlet and oppositely positioned outlet conduits, of the construction in which the said conduits present a rigid section terminating above the heads of the machine operators when standing, *and in which the said conduits at each side are provided with a cuff of highly flexible material extending therefrom toward the machines to enable currents of air produced by the fan and discharged through the cuffs to be directed*

against the machines and the cuffs to yield upon impingement with an operator or other obstruction in their path of travel."

This is a combination patent and must be dealt with as such. The requisites for a valid combination patent are set out, with a large number of citations in 40 Am. Jur. 543, No. 19:

"A combination is a composition of elements, some of which may be old and others new, or all old or all new. It is, however, the combination that is the invention, and is as much a unit in contemplation of law as a single or noncomposite instrument. The authorities establish the following propositions respecting the patentability of devices or processes of this character: (1) that a combination is patentable if it produces new and useful results, although all its constituents were well known and in common use before it was made, provided the results are a product of the combination, and not a mere aggregate of several results, each the product of one of the combined elements; (2) if it produces a different force, effect, or result in the combined forces or processes from that given by their separate parts, and a new result is given by their union; (3) if it either forms a new machine of distinct character or formation or produces a result which is not the mere aggregate of separate contributions, but is due to the joint and co-operating action of all the elements; (4) when the several elements of which it is composed produce by their joint action either a new and useful result, or an old result in a cheaper or otherwise more advantageous way." *City of Grafton v. Otis Elevator Co.*, 166 F. 2d 816. *Colgate-Palmolive Company v. Carter Products*, 230 F. 2d 855.

Taking up first for consideration the question of the validity of the Holtzclaw patent, one finds from Claim 6 that it discloses the combination of highly flexible cuffs many times in the evidence spoken of as sleeves, arms, or nozzles, in conjunction with a travelling cleaner of the gen-

eral type exemplified by the basic claims of all of the patents offered in evidence and discussed in the briefs of the parties; the cuffs, arms, sleeves or nozzles, so called, extending downwardly below normal head level to enable currents of air to be discharged through the cuffs, and directed against the various surfaces of the machines being operated and in that means against the materials in process, in such volume and through such means as not to affect the product being manufactured and in such way as to enable the sleeve or cuff through which the air is conveyed to yield if they should come in contact with the operator of the machine or should find the path of travel obstructed. By this claim and its practical effect, Holtzclaw has evidently overcome the problem which confronted the industry for many years and has devised by his invention a means and a method to deliver air to out of line surfaces and at a correct velocity and in such volume as is found proper. The value of this invention when put into effect as a practical proposition, met a ready response from the textile industry and has been highly successful commercially.

A careful study of the record in this case unalterably leads one to the conclusion that the patent in suit is good and valid in law and represents patentable invention. The testimony heard unquestionably discloses that result. This is more easily seen and the result more nearly known when one likewise studies the various exhibits offered in evidence and sees first hand the results that are obtained from the use of the patent in suit. The photographs convey this thought much more clearly than does the testimony; so much so that one, even though entirely unacquainted with the manufacture of textiles, can readily grasp the fine results and the great advantages that come from the Holtzclaw patent. Hardboiled textile executives and business managers of textile plants gave their testimony of the value of the improvements brought into being from the use of these machines. Evidently the textile trade was much impressed, for in 1955, the last full year before the trial, one hundred and fifty five textile plants purchased the

product made by plaintiff under the patent in suit, for use in their various manufacturing plants,—thirteen hundred and ninety five units being sold by plaintiff, with the sales aggregating approximately three and one half million dollars, and, representing through such purchases a saving in labor to the mills in cleaning of an estimated one and one half million dollars that year.

The mills purchasing this product represented approximately one seventh of the textile spindles in America. So workable did this travelling cleaner with the flexible cuff become that the sales thereof amounted to approximately 96% of the travelling cleaners that were made by plaintiff.

The validity of plaintiff's patent is further strengthened by the presumptions which are in its favor arising from the grant of such by the Patent Office. This presumption of validity can only be overcome by strong proof and as Mr. Justice Cardozo strikingly said with respect to the presumption that comes from the grant of a patent, among other things, "through all the verbal variances, however, there runs this common core of thought and truth, that one otherwise an infringer who assails the validity of a patent fair upon its face, bears a heavy burden of persuasion, and fails unless his evidence has more than a dubious preponderance." "Again it is said that the presumption of the validity of a patent is such that the defense of invention by another must be established by the clearest proofs—perhaps beyond reasonable doubt." *Radio Corporation of America v. Radio Engineering Laboratories Inc.*, 293 U. S. 1, 7, 8, 55 S. Ct. 928, 931, 79 L. Ed. 163; *Lever Bros. Co. v. Proctor & Gamble Mfg. Co.*, 139 F. 2d 633.

This presumption is additionally strengthened where the references urged against the patent were considered by the Patent Office prior to the issuance of the patent. *Chesapeake & Ohio Ry. Co. v. Kaltenbach*, 95 F. 2d 801; *Gulf Smokeless Coal Co. v. Sutton, Steele & Steele*, 35 F. 2d 433.

The Patent Office seems to have considered the Hodge patents 2,184,880 and 2,047,558, upon which the defendant relies most heavily and they evidently were found not to have disclosed Claim 6 in the Holtzclaw patent and it would appear that the other patents cited by defendant either involved essentially the same principles as those which were considered or are so remote as to be distinguishable on their face. All together defendant cited twenty five patents against the patent of plaintiff but the disclosures therein, in my opinion, do not show the Holtzclaw invention, indicating that it is possible for one some time to *have so many unmatched stones that he can't build his fence.*

Judge Parker, in *Reynolds v. Whitin Mach. Works*, 167 Fed. 2d 78, under a somewhat similar offering said:

> "Defendant has cited 21 patents as basis for its contention that complainants' invention is lacking in novelty; and this in itself is evidence of the weakness of the contention. Such a citation of so many prior patents almost always means either that none of them is in point and that the patentee has brought together for the purpose of his invention devices to be found in prior patents of different character; or that there have been prior attempts to solve the problem with which he was confronted which have not met with success."

Defendant's tri-rail cleaner was brought out by it in 1951 as evidenced by defendant's exhibit D; prior to that time it was engaged in making and selling the Lawrence type of cleaner which was only claimed to clean the upper portions of the spinning frame, and in addition was recommending to its customers that they install a separate underframe cleaner, manufactured by the defendant, which would clean only one frame. This tri-rail cleaner obviously from its name, operated on three rails.

In 1954 representatives of both plaintiff and defendant sought to sell the products made by their employer to Burlington Mills, and each representative conducted a

demonstration of their respective cleaners. Ultimately Burlington purchased plaintiff's cleaner, but not before it had given Mr. Kulp, Sales Engineer and District Manager at Charlotte, for the defendant, the opportunity of determining whether or not the defendant could manufacture and install on its tri-rail cleaner flexible cuffs or sleeves much alike the cuffs made by the plaintiff and serving the same purpose. This was done at defendant's manufacturing plant in Cleveland, and on delivery such flexible cuffs were attached, and defendant again demonstrated its tri-rail cleaner to the Burlington officials. However a sale was not effected.

Plaintiff's exhibit 10 and 11 are indicative of the tri-rail cleaner of the defendant with its conception of the flexible cuffs attached, as demonstrated to Burlington and later offered for sale to textile mills generally.

In December 1954 the defendant made and sold and installed certain travelling cleaners which were within the scope of Claim 6 in the patent as is best illustrated by plaintiff's exhibits 10 and 11, and following such sales of its manufactured articles, the defendant has continued to manufacture and sell and to offer for sale, such similar devices as are further indicated by plaintiff's exhibits 10 and 20, and others of the exhibits offered at the trial. These appliances manufactured and sold by the defendant are clearly an infringement of plaintiff's patent.

I am of the opinion, therefore, that Claim 6 of the Holtzclaw patent, No. 2,524,797 is good and is legally valid.

The defendant has infringed Claim 6 of the Holtzclaw patent by manufacturing and selling, and offering for sale and installing for operation the devices illustrated by plaintiff's exhibits 10, 11, 19, 20 and other exhibits as well as some of the exhibits of the defendant.

That plaintiff is entitled to an injunction perpetually enjoining and restraining the defendant during the life of the patent from either directly or indirectly infringing upon Claim 6.

And further, that plaintiff is entitled to recover damages for the infringed acts and proximately flowing therefrom, together with the costs of the case.

Counsel will accordingly submit decree.

This the 4th day of January, 1957.

WILSON WARLICK,
United States District Judge for the Western District of North Carolina.

JUDGMENT.

(Filed January 18, 1957.)

THIS CAUSE came on to be tried before the Court, sitting without the intervention of a jury, and the Court having considered the evidence introduced by the parties, including stipulations, exhibits and the entire record in the cause, as well as the briefs and arguments of counsel for the respective parties; and the Court having heretofore prepared and filed its findings of fact and conclusions of law as contained in its memorandum decision which is made a part hereof by reference, it is hereby

ORDERED, ADJUDGED AND DECREED as follows:

1. That United States Letters Patent No. 2,524,797, issued October 10, 1950, to plaintiff as assignee of Grover B. Holtzclaw, is a good and valid patent, and that the entire right, title and interest in and to said patent, including all rights of recovery for infringement thereof, are vested in plaintiff, Parks-Cramer Company.

2. That the defendant, The American MonoRail Company, has infringed Claim 6 of said Letters Patent No. 2,524,797 by manufacturing and selling or offering for sale and installing for operation the traveling cleaners

illustrated by plaintiff's Exhibits 10, 11, 19 and 20 and other devices of the defendant.

3. That the defendant, The American MonoRail Company, its officers, employees, attorneys and agents, be, and they hereby are, perpetually restrained and enjoined during the life of said letters patent from directly or indirectly making or causing to be made, using or causing to be used, selling or causing to be sold, any and all apparatus made in accordance with or embodying the invention described and claimed in Claim 6 of the said Letters Patent No. 2,524,797, and from infringing upon or violating the rights of the plaintiff in Claim 6 of said letters patent in any way whatsoever.

4. That the plaintiff, Parks-Cramer Company, recover of the said defendant, The American MonoRail Company, the gains and profits made by the defendant and the damages sustained by the plaintiff by reason of such infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest thereon.

5. That this cause be, and it is hereby referred to _____, Special Master, to ascertain the amount of such gains and profits and damages, and that plaintiff, on said accounting, have the right to cause an examination of the said defendant, The American MonoRail Company, ore tenus or otherwise and also the production of all proper books, vouchers and documents of the said defendant and that the said defendant attend for such purposes before said Master from time to time as the Master shall direct.

6. That the plaintiff, Parks-Cramer Company, recover of the said defendant, The American MonoRail Company, its costs and disbursements in this suit to be taxed.

Entered this 18th day of Jan. 1957.

WARLICK,
United States District Judge